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BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 15. SALEM: JAN., FEB., MARCH, 1883. NOS. 1, 2, 3.

1883-

SWEDISH SUPERSTITIONS AND CHARACTERISTICS.

BY ALBAN ANDREN.

READ MONDAY, JANUARY 1, 1883.

You find among the Swedes many peculiar superstitions, which seem to cling with great tenacity from by-gone times. So, for instance, it is the custom for chambermaids or others, making the beds in the morning, not to leave an unfinished bed under any pretext to go to any other work, for fear that the person that is to occupy it may not rest easily. In most Swedish stables you will find a dead crow or blackbird hung over each horse, which is considered a sure prevention for the evil one riding the horse in the stable at night, and it is asserted by the farmers that when such prevention is not taken the horses are found in the morning foaming at the mouth, sweaty and blowing hard, as if just arrived from a furious drive. In my boyhood, whenever a person sneezed it was considered polite for bystanders to say "God save you" or "Prosit;" and the more popular a person was in society the more people were ready to say "God save you" in case of sneezing. At an evening party, a society belle, after being duly coaxed, would sit down and commence fingering the

ivories of a piano, and it was ludicrous enough if she happened to sneeze to see about a dozen young men and old men make deep bows, and seriously exclaim in chorus, "God save you, Mademoiselle," she returning the compliments with a gracious "Thank you, sirs." This custom is still retained among the Irish, who say "bless you" or "save you" on similar occasions. It is said that centuries ago a contagious disease passed over Scandinavia and northern Europe, which commenced with sneezing, and after sneezing a few times it ended fatally; and naturally under such circumstances the friends of the sneezers would exclaim "God help you" or "save you," and thus it came to be handed down from one generation to another, until it became a standard form of etiquette. It is now, however, growing out of fashion. In families, particularly among the fair sex, it is a sure sign of becoming angry and hot-tempered during the day if the nose itches in the morning; also, if the palm of the left hand itches, you are to receive money, and if it is the right hand you have to pay out money during the day.

If the left eye itches, a lady caller may be expected, and if it is the right eye, then a gentleman is sure to call during the day.

One saying is, never point an empty gun at anybody, for the evil one may load it; and further, never make a wry face, for if the clock should strike twelve, the wind change, and the cock should crow at the same time, your face will forever remain in that ugly condition.

Many poor students manage to get through the elementary and regular colleges by the aid of charity meals, which is done in this way:

A student calls at your house and asks that you will invite him once a week to your table, dinner or supper; and after getting such permission in one family he goes to another and asks a similar privilege, and so on until he

has secured free dinners and suppers for the whole week during the term. No shame seems to be attached to this free lunching; and as a rule, each family tries to set a better table on poor students' day than on any other, although there are exceptional cases in which the reverse is done.

Some of the shining lights among the Swedish professional men have passed through college by the aid of such charity meals, and are not ashamed to confess it.

If there is one class of people that ought to be prosperous in Sweden, it is the hatters, for owing to the Swedish etiquette of uncovering your head in the street to mere passing acquaintances, the brim of the hat soon wears out; and an American gentleman, lately returned from Sweden, told me that the next time he goes over there, he surely should get a silk hat made with a sheet iron brim, to enable it to stand the strain put upon it by the demands of the prevailing etiquette. Even two brothers, and chums, as we say here, when they meet in public, take off their hats at meeting and parting with a great deal of reverence. Your own servants meet you in the street, and as they doff their hats or make a courtesy, you are expected to raise your own in return. It is also the etiquette, if parties pass each other on the left to raise their hats with their right hands, and *vice versa*, so as not to obscure your face from your friend in raising the hat. In going into offices, stores, restaurants, bar-rooms or billiard saloons, the Swede uncovers his head just as reverently as if going into church. In the country the farmers and peasants generally uncover their heads in going by churches or cemeteries, as a mark of respect.

Writers on Sweden have said that no real deep religious sentiment exists in that country, and this is equally true, I think, wherever state and religion are united, for in Sweden you *must* be baptized when two years old, whether you want to or not. You may bawl and kick all you like

but baptized you must be; there is no getting away from that. At fifteen you must join the church and be confirmed, and at that age you have ceased to be rebellious and fall in to the traces with proper grace. Then you ought to go to the sacrament at least once a year, and you may forfeit certain citizens' rights should you not have been to such holy communion for a period of five successive years. Thus you see that religion and business are, as it were, closely linked together, and by degrees you begin to perform your religious duties in a sort of automatical manner, very reposing both to body and mind. Any undue excitement in religious matters, such as noisy revivals, etc., is not enjoyed by the better classes of Swedes, although foreign missionaries, particularly Swedish-Americans, occasionally do a little missionary work among the country people in this line, and it would be a great deal better for the peace of the country if they would confine their labors to fields more ripe for the harvest.

The Swedish barber is a man of no little importance, as in addition to the usual duties of hairdresser, wig-maker, and barber, he has to pull teeth, set leeches, attend to bleeding and cupping, and occasionally, practises a little surgery if he has passed examination in that line. Never shall I forget my first experience in having a tooth pulled by a Swedish barber. I went up the stairs to his rooms, but in taking hold of the door-knob, the tooth-ache disappeared, and I went down to the street again, when the ache commenced worse than ever. I returned, although the same miracle was repeated when I got to the door again. I made bold to enter. He was alone, that man of torture, and, after looking me over, he asked me to sit down on the floor near the window, and took out from a drawer a mysterious tool, looking very much like a large corkscrew; with this he took hold of the tooth, standing over me with one hand resting on the top of my head, and with the other

pointing upwards, just as you pull a cork from a quart bottle. After getting one-half of the tooth out, the door opened, and in came a man to be shaved, and the barber asked me to wait till he had shaved the customer, when he would try again. I sat on the floor waiting till the man was shaved, when the barber commenced almost the same operation, almost lifting me from the floor, until at last his efforts were crowned with a glorious success. The charge was about ten cents. Some years afterwards, an American dentist from Philadelphia settled in Gothenburg, and fitted up luxurious parlors with operating chairs and all the modern Yankee fixings, and everybody predicted a quick failure if he meant to keep to dentistry alone, without doing some shaving, hair-cutting, and wig-making, with occasionally a little leeching, bleeding and cupping; but to the astonishment of all, he built up a large practice, and others, following in his wake, have now in a great measure relieved the barber from his primitive method of dentistry. "Allah be praised!"

Easter eve is celebrated by a family gathering and a late supper, consisting of boiled rice and hard and soft boiled eggs, with the usual allowance of wine.

A story is current in Sweden of a charity student being invited at such Easter eve supper to the family in which he had his free meals; before him stood the large deep bowl filled with the customary boiled rice, and on either side a decanter of wine. The room was lighted by two candles on the table, and in snuffing them both were accidentally put out, and the maid sent out to the kitchen to relight them; when all were in darkness the student thought he would improve the opportunity to take a long draught from one of the wine decanters, and after doing so he set it down softly on the table, but when the lights were brought in, it was found to the astonishment of all that instead of putting the decanter back again on the table, he

had placed it deep in the middle of the bowl of rice before him. Tableau: French leave, and no more free meals for the unlucky student in that family.

When darkness sets in on Easter eve, you will see all the hills lighted up by great bonfires which are kept up till sunrise on Easter day. This is done in memory of an old superstition that the devil and witches had full sway on the earth during the days the Savior laid in the grave, and particularly on Easter eve it was said that the witches by riding on brooms through the air would congregate on the hill-tops and concoct evil doings for the human race, and to keep them away the superstitious people would light every available hill-top with rousing bonfires.

As the witches are all dead long ago with the exception of their flaxen-haired and blue-eyed fair descendants which the Swedes don't want to scare away, you see there is no actual need at the present time to keep up these Easter bonfires, except as a time-honored custom, and it is one of the features of Easter eve for families to go out to look at the display of bonfires in the evening, after supper.

The 25th day of June, in Sweden, is St. John's day, or midsummer day, and is one of the most social and enjoyable holidays in Sweden. The evening before is midsummer night, which is celebrated by decorating of May-poles, around which the peasants dance till early dawn. Months before this festival, the peasant girls will save the egg-shells by carefully blowing out the contents; such empty egg-shells are strung on a twine like beads on a string and the green covered May-pole is wound spirally by such egg-shells, looking at a distance like white pearls on a dark green ground, and has a very pretty effect. Besides this the May-poles are dressed with flowered hoops, garlands and bright ribbons, and for a couple of months afterwards you will see the May-pole standing on the village green as a monument of a joyous and happy occasion.

It is not without interest, once in a while, to find out what other people think of us. By us, I mean we Americans.

On leaving England, where I lived a year and a half I was told by the cashier of the iron establishment where I worked in Lancashire, that the Americans were very queer people; and he asked me if I had bought a revolver to take with me to Boston.

I said no; for I confessed I did not know how to use one, and I was afraid I would do myself more damage than good, and he said he was very sorry, for he knew I would not have a very long lease of life in New England without one.

I have been here about fourteen years, from Maine to Illinois, from Canada to North Carolina, and to the honor of this country, I want to say I never owned one and never had the need of that weapon during this long time. He also stated very seriously that if I went to churches in New England, I would see the men resting their feet on the top of the pew in front, and that they were in the habit of smoking pipes while in church. The first time I went into a New England church, I sat anxiously waiting to see the men put their feet on the pew in front and pull out their pipes, but I was very agreeably disappointed, and I have come to the conclusion that the New Englanders, although they are a young race, are almost as civilized as the people of Great Britain.

I also heard of a German who emigrated to this country and afterwards married an estimable young American lady, at which his parents were very much distressed; and when some years afterwards he travelled with his wife to see the old folks, they were greatly relieved at seeing the young wife; for they said, we thought all the time that coming from the United States she must be black, and she is just as good-looking as we are.

Now the ordinary Swedes also have a very imperfect

knowledge of this country, that is, as to its extent and relative location of cities and states. This is not to be wondered at, for the same I believe is true as to the general American knowledge of the localities in Sweden; and what care we here for the relative position of such hard-sounding names of Swedish counties as Bohnslau, Dalsland, Westergotland, Ostergotland, Kalmar, Skaue, and Smaland; so you must not think that we Swedes are very ignorant and verdant because we do not know the geography of the United States, and this the more, as in our Swedish school atlases, Sweden and Norway occupy a couple of double pages, whereas only a small portion of a page is devoted to the whole of North America, and we naturally come to the conclusion that distances in the United States are small as compared with Sweden, and it is only by travelling through the United States that we get a proper idea of the vast extent of the country. I make this explanation that you may understand what follows: about fourteen years ago, when I left Sweden for the United States, a number of friends called on me and said they had heard I was going to Boston, U. S. A., and would I be so kind as to take a letter and message with me for some relation or friend of theirs. Oh, yes. I took about twenty-five letters addressed to persons in Illinois, Wisconsin, Minnesota, and New Sweden, Maine, my friends saying that such places were not far from where I was going, and they and I had an idea that they were all suburbs of Boston, and that it would be a pleasure to deliver the letters in person.

When I arrived in Boston, I met an American gentleman to whom I had a letter of introduction, and after taking dinner with him, he asked me what I meant to do. I said I was going to work in a day or so, but that I had first a number of letters to hand round to friends in the suburbs of Boston, and I would be obliged to him if he

would tell me what kind of horse-cars to take to reach such places. He said certainly, "please show me the letters," which I handed to him; and as he began to read Illinois, Wisconsin, Minnesota, Texas, Missouri, and New Sweden, Maine, he looked at me with a strange expression in his eyes, and I began to fear I did not please him, so I asked him what the matter was, and he said he thought I might be tired after my long journey, and if I would pay him three cents apiece for the letters, he would see to it that they would reach their owners. I thought he was remarkably kind to offer to run round for me at that price, and it was not until some time afterwards that I found out that he engaged Uncle Sam to deliver my letters, and that the directions thereon were States situated thousands of miles apart, instead of being suburbs of Boston.

The Indians are ever an interesting subject for the Swedes at home to enquire about, for they seem to have an idea that Boston has about as many Indians as white people among its population, and I was asked this summer if I had had much trouble with the Indians, and if I was not afraid of being scalped, and all such matters, to which I replied that as far as my observation had been among the Boston Indians, I had found them very orderly and peaceable, and that, in fact, the most of them were very well-behaved, being mostly employed as sentinels outside cigar and tobacco shops.

A bald-headed person coming from the United States to Sweden excites a great deal of curiosity among the common people in that country, for it is hard to convince them that he has not left his scalp suspended, as an ornamental appendage, to the belt of one of the noble red Indians of the Boston prairies.

RECORDS OF THE CITIES AND TOWNS OF ESSEX COUNTY. INFORMATION ON THEIR CONDITION REQUESTED.

At a regular meeting of the Institute held on Monday evening, February 5, 1883, Vice President Robert S. Rantoul stated that he had corresponded with John T. Hassam, Esq., of Boston, who is interested in a plan for a thorough examination of the town and city records in this Commonwealth, to ascertain their present condition, also looking to their preservation and to the adoption of the most approved methods of arrangement.

The increasing interest, during the past few years, in genealogical and historical investigations, has imparted to these records a due appreciation of their value as depositories of historical information and the great need of the fostering care of the legislature and of those in authority.

Mr. Rantoul showed some blank forms of a circular which had been prepared for the use of the town and city clerks, so that a uniformity in the returns may be observed; also a circular-letter to be signed by the President, soliciting a response to the questions proposed.

Mr. Hassam has requested the coöperation of the Institute, and is desirous that it would take charge of the sending of the circulars and the receiving of the returns from the clerks of the cities and towns of Essex county, mentioning that other societies in the state had been invited to coöperate and to assume their respective proportion of the work required.

The subject was referred to a committee consisting of Messrs. Robert S. Rantoul, Henry F. Waters, and James A. Emmerton with authority to act.

IN MEMORY OF
CALEB COOKE,
Born February 5, 1836,
Died June 5, 1880.
ASSISTANT AND CURATOR
IN THE MUSEUM OF THE
PEABODY ACADEMY OF SCIENCE.
1867 — 1880.

PRESENTATION OF THE CALEB COOKE MEMORIAL TABLET TO THE TRUSTEES OF THE PEABODY ACADEMY OF SCIENCE, JAN. 12, 1883.

The subscribers to the Caleb Cooke Memorial Tablet met in the lecture room of the Academy on Friday evening Jan. 12, 1883, for the purpose of transferring to the trustees of the Academy the mural tablet which had been placed in the hallway a few days before.

Mr. John Robinson presided at the meeting and introduced the subject as follows: During the spring of 1882, a few friends of the late Caleb Cooke, feeling that his untiring interest and long continued services in behalf of the scientific institutions of Salem should in some way be recognized, and that a simple record of his work should be placed before the eyes of the public, suggested the advisability, by a general subscription, of raising a sum of money sufficient to purchase and place in the museum, where so much of Mr. Cooke's life had been spent, a fitting mural tablet to his memory.

The suggestion met with the cordial approval of all and, without solicitation other than a short notice in the Salem newspapers, nearly the required sum was raised in fifty cent subscriptions. This was augmented by the proceeds of an entertainment and a few larger subscriptions from intimate friends.

The trustees of the Academy gladly approved of the project, and at once a committee of the subscribers arranged with the Boston Terra Cotta Company for a suit-

able tablet and border from original and appropriate designs. This upon being moulded proved even more satisfactory than was expected, and was soon completed and placed in the position selected at the Museum, the work of setting the tablet being gratuitously performed by Mr. Joseph N. Peterson, the Academy's mason.

It would not be the wish of our late friend that we should come here in a spirit of sadness, but rather that we should meet socially and pleasantly as he himself was always wont to do. It is fitting too that, in this hall where, yearly, thousands of visitors pass to and fro, a simple memorial should meet their eyes and continually remind them of one who contributed so much towards the collection of the specimens and the arrangement of the Museum.

Mr. Robert S. Rantoul, in behalf of the subscribers, presented the tablet to the trustees in the following words:

The friends of the late Caleb Cooke, and it was my pleasure to be counted among them, have commissioned me to tender, in their name and behalf, to the trustees of the Peabody Academy of Science, the mural tablet which they have placed here, to be a memorial as lasting as it is unique and beautiful, of our lamented friend, an officer of this school of science.

It is well that here, in the very scene of his labors, the generations who are to enjoy the fruits of them should pause before this simple slab. It matters little now that he whose name it bears was the pupil and coadjutor of Agassiz,— that he had been a voyager in both continents of the Southern Hemisphere,— that he lived here or there died. But it matters much for all time to know that here was one who could forego the keener gratifications of the hour for the sake of lasting good. Here

was one who was happier to toil modestly and inconspicuously at the far-off solution of those endless problems of the material world, so the result obtained might be ever so little a modicum of truth, rather than to struggle after the unsubstantial prizes of reputation and of life, so apt to crumble in the hands that snatch them. Here was a man who found content in friendships,— his highest pleasure in human sympathy and modest work. Other men understood and professed that usefulness is happiness and that there is no higher good than doing for others what good we can. Here was a man who felt and acted it. And if it be true indeed, that getting and giving are the be all and end all of American life, then it is well that this elegant memorial shall attest the fact that here, amongst us, in this bustling nineteenth century of ours, there lived and died a quiet worker, little known and caring little to be known beyond his sphere, wise enough to know that no getting more enriches than the getting, out of her secret storehouses, of Nature's jewels of knowledge,— that no giving more truly warms the heart of giver and taker, and is twice blest, than the giving of knowledge.

We need not here recount the simple phases of this life too early spent. They are a familiar portion of our household history. To the labyrinthian mazes of this noble museum his mind was the clew. It was said, somewhat extravagantly, that he could put his hand, in the dark, on every specimen, but of how many of those specimens was it the fact that his hand had placed them where they were. I say nothing of his philanthropy, of his broad catholicity of spirit, of a score of estimable personal traits, each as conspicuous as his unswerving love of science. Other occasions have been found to speak of them, and others will speak of them

here; my function is less broad. For those of the passing generation who knew our friend there is no need of word or tablet to keep his memory fresh. The laurel, perennial green, the shells reversed, the bird of wisdom, seeing through the darkness, these are fitting emblems, were emblems needed, of the memory of our loss. But for that greater multitude which follows on, to which his life will be a myth and his life-work will be only merged in the mighty aggregate of modern scientific thought, let this slab remain, while this noble monument, the Peabody Academy, shall stand, to attest that only those who serve are worthy, and that by the side of wealth which grandly endows science, is to be commemorated with equal gratitude that life-consecration which makes science and its grand endowment possible.

At the close of Mr. Rantoul's address, Dr. Henry Wheatland, Vice President of the Peabody Academy of Science, accepting the memorial, responded in behalf of the trustees, as follows:

It is much to be regretted that on this occasion our honored President is not here to respond in fitting terms to your appropriate remarks at the unveiling of this memorial given by many friends, in recognition of the relations of Mr. Cooke to this institution.

The President has been for several months in Europe and will probably remain until the spring or early summer when I hope that he will return with greatly improved health, which had been much impaired by arduous and exhaustive labors on the bench of the Supreme Court.

Some thirty years ago, a tall, red-haired youth, not out of his teens, came to the rooms of the Essex Institute and desired to be a member. He was elected May 11, 1853, and continued his membership from that time

until his decease, taking a deep interest in its objects and in the natural sciences, and for more than twenty-one years of this period held some official position, or a place on some important committee.

Caleb Cooke was the son of William and Mary (Fogg) Cooke, and was born in Salem Feb. 5, 1836. His father was a mariner and for several years was an officer on board of vessels engaged in the West African trade and died in California when the son was in his boyhood. He was educated in our public schools, and commenced active life as a clerk in the bookstore of Henry Whipple & Son, continuing in this position only for a short time when he left. After spending about one year with George F. Read in the study of the languages, especially the Latin, he devoted himself principally to the pursuit of natural history, which had long been his inclination.

To this end he went to Cambridge and pursued his studies under Prof. L. Agassiz, *the great teacher*, who during his residence in this country had done so much to stimulate the study of nature and a spirit of scientific investigation, commenced the formation of the Museum of Comparative Zoology, and gathered a class of pupils, many of whom have contributed much to advance his plans and have become distinguished. They hold or have held many prominent positions, professorships in our various seats of learning, the charge of museums, conducting scientific explorations, or preparing communications to the publications of learned societies or the journals of the day, or separate treatises on their respective specialties. Such were his associates during his connection with Agassiz.

In 1859, at the request of Professor Agassiz, he went to Para, Brazil, to collect specimens for the Museum, and in 1860 he went to Zanzibar on a like mission, sailing from Salem in the bark Persia on the fifth of November of

that year. He remained in this field of labor until he was compelled to leave on account of sickness, having the African fever, but almost recovered his health during his passage home, arriving at Providence per English bark Sheffield, May 17, 1865, after an eighty-two days' passage from Zanzibar.

While he was absent, Professor Agassiz and Senator Sumner procured for him the appointment of United States Consul at Mozambique, but the commission passed him in transit and he never acted under it, although his name was borne upon the rolls for several years.

From the organization of the Peabody Academy of Science in March, 1867, until his decease, he was an Assistant and one of the Curators of the Museum under its charge.

He was a member of the American Association for the Advancement of Science, and of the Boston Society of Natural History.

In 1875, he assisted Dr. G. M. Levette of the State Geological Survey of Indiana, in a hydrographic survey of a dozen or more of the lakes in the northern part of that state, where his experience in the collecting and preservation of specimens of natural history and in seining and dredging was of great value.

About a year after its organization in 1869, the Salem Fraternity first attracted Mr. Cooke's attention. He soon became one of its most helpful friends, and more and more he took into his willing hands multiplying activities. He was interested in the formation of the library and reading room, becoming chairman of the committee on these departments and constantly and earnestly devoting himself to the welfare of this institution. He possessed admirable traits of character. No one could take more pains

to confer a favor than he even to the humblest of the boys. He was a useful man in the line of his specialties.

Resolutely following up his work to the last, refusing to listen to the suggestions of rest or medical advice till it was too late, he sank rapidly to his death, which occurred on the fifth of June, 1880.

In behalf of the trustees, I accept this noble tribute to his memory, and tender to you, the representative of the contributors and of those who took the charge of this work, their sincere thanks. It will always have a suitable place on the walls of their building.

May it be an incentive to others to take up his mantle and go and do likewise in the advancement of all in education, knowledge and general culture.

Rev. E. B. Willson being called upon by the presiding officer as connected with the Salem Fraternity, of which Mr. Cooke had been an active member, said:

Mr. Cooke's long-continued and valuable work as a sincerely devoted manager and helper, in carrying on the several departments of the Salem Fraternity, was always a gratuitous service, given cheerfully and without solicitation. He was the one who came when others staid away: day or evening. He had great influence with the boys and young men. He knew how to control with vigor, yet with kindness and justice, the sometimes rather turbulent crowd which resorts to the amusement room of the Fraternity of a winter's evening. He hated cant and all the affectations of a busy and pretentious benevolence; would not hear praise or commendation of himself; believed in showing whether or not he was a friend of his kind by what he did, and not by speech.

The Fraternity lost its right hand when he died. Its counselling intelligence lost, too, in him some of its best practical wisdom: that wisdom that comes primarily from a hearty interest. In him was an unwearying willingness to plan and to work for the objects which this association seeks to accomplish. He believed in it wholly. He saw in its methods the best, perhaps the only, way to deal with a class of persons especially exposed, especially unprovided for in the general social and educational arrangements of the day, and equally endangering society in the future, if unconsidered now.

If any should be kept in remembrance, and should have commemorating tablets set up as memorials of their rare qualities and services it is such as he.

The Chair referred to Mr. Cooke's love for nature and the enjoyment he always took in collecting the earliest flowers at spring, and called upon Mr. W. P. Andrews as one of the friends who had frequently accompanied him at such times.

In response, Mr. Andrews said:

He had but one word to add to the just and discriminating estimates of Mr. Cooke; and that was as to his non-observance of religious forms and ceremonies, and the fact that he was never to be found inside a church on Sunday morning. This arose not from depreciation of the value of any sincere religious conviction; for Mr. Cooke's life was sincerity itself, and he was quick to recognize any good in the world; but rather from his deep feeling for our common mother Nature, who spoke to him in tones which made the efforts of the average preacher and congregation seem tame and cold in comparison.

To one who is always conscious of the lofty harmonies of the universe, the confinement of a meeting house, and the somewhat labored requirements of stated devotion, are often less a help than a hinderance to real adoration. Above all things Mr. Cooke was real and true to a remarkable degree; and if he was careless of the outward formulas of worship, the best and most genuine of his clerical friends have borne manly testimony to the fact, that his whole life was an act of devotion. "While we preached the Christ and him crucified, he lived the Christ life," said one of the five ministers of the Gospel who attended the funeral of this unobtrusive, humble worker; and the statement sums up Mr. Cooke's being, which was indeed a perpetual prayer; unuttered by the lips,— for he made no outward professions of any sort,— but *acted* in his unconscious daily existence. Could he help the needy in mind, body or estate, there was his service. Could he assist a friend in any work or pleasure, there was his hymn of praise. And nothing could daunt him unless it was the expectation of some acknowledgment of gratitude, from which he shrank as hastily as most men seek reward here or hereafter for the good they have done.

His life was undoubtedly shortened by his untiring devotion to the charity with which his name will be forever associated; and almost his last strength was spent in giving pleasure to a friend's children, whose sunny natures always found an answer in his own unselfish child-heart. The lovely arethusa, which they had gaily plucked together on the last Sunday morning he was with us, bloomed on unwithered, when his own outward form was returned to the Great Mother whose gentle spirit blossoms anew in the sweetness and purity of his own.

Careless of forms, and all our casual creeds,
Known truly but to nearest friends, and few;
He simply asked: "What is there I can do
For others?" heedless of his own scant needs.

He led the Life that every pulpit feeds,
Though ne'er the pastors found him in a pew:
Yet one said: "Brother, many years we two
Have preached The Christ;— he made our *words* his deeds."

Pure Soul! not for himself he spent his might,
And humbly learned his Mother Nature's lore,
Roaming a child, with children, by her side.

Leal-hearted Comrade! not for him came night;
Rather for us who took the flowers he bore,
The flowers still fair, though he, good man, has died.

The Chair then read several letters which had been received from persons at a distance, and those nearer home who were prevented from being present on the occasion and which are referred to below:

CAMBRIDGE, MASS., Jan. 12, 1883.

Were it not that I have been confined to the house for several days by a severe cold, I should be with you this evening to join in the well deserved tribute to the memory of Caleb Cooke, my friend and associate for so many years.

He was a faithful worker and officer in the Institute and Academy, and to his quiet and unostentatious labors far more is due in developing the wide-spread interest in local natural history pursuits, for which Essex County has become noted, than his peculiar character and habits would lead the superficial observer to suspect. His singular life, with its many deep undercurrents of thought and action, was only understood during his lifetime by a few who had long been associated with him, although his good works have been acknowledged since his death. I am personally thankful that the memory of my friend is to be perpetuated by the tablet to be presented to the Academy this evening, and it seems to me that the Board of Trustees

will never be called upon to accept a more honorable trust than its perpetual care.

Regretting that I cannot be present at the ceremony of presentation,

I remain,
Yours very truly,
F. W. PUTNAM.

PROVIDENCE, R. I., Jan. 17, 1883.

I received your postal card in reference to the dedication of the memorial to Caleb Cooke, and being much occupied with sickness in my family did not answer it at once, supposing that the exercises would not take place immediately. I regret exceedingly that I did not send a letter at once to be read on the occasion with the others. I had a peculiar regard and affection for our departed friend. His unselfish devotion to his friends, his zeal for science and the very many unostentatious services he rendered to those working upon scientific subjects, as well as the hearty and wholesome manner in which he labored for the Essex Institute and Peabody Academy of Science, as well as the Salem Fraternity, are deserving of the permanent record which has been made.

Yours very truly,
A. S. PACKARD, jr.

It is with regret that I am unable to accept your kind invitation to attend the presentation of the Caleb Cooke Memorial to the Trustees. I venture to send a word of tribute which you may hide away with your account of the evening's exercises; it is simply the word of a witness who knew him not only in the work of the Summer School and the Essex Institute, but through his generous regard for children.

Kind hands erect this Tablet
To the memory of one,
Whose hand was ever ready
To assist his fellows,
Whose heart was kind and tender
As a child's; as loyal and true
As any knight of old;
Simple and unpretentious,
Yet great, because *himself;*
Honest, upright, sincere,
Such was the man we honor,
He lived and labored *here.*

Yours cordially,
KATE TANNATT WOODS.

SALEM, Jan. 12, 1883.

GRAND RAPIDS, Jan. 14, 1883.

I wish to express my thanks that I am still remembered in Salem, and especially that I am identified as a friend of the late Caleb Cooke.

I know nothing of the circumstances connected with his death — simply that he is gone, and I feel the deepest sorrow that this must be.

Mr. Cooke was the first person, belonging to the Peabody Academy of Science, who welcomed me when I reported myself as a student for the summer class of 1876, and his cordial, earnest greeting gave me a feeling, at once, that he was to be among those who would take an interest in my welfare. Mr. Cooke had many opportunities that season to extend friendly services, and special acts of kindness, for which I shall always feel grateful.

I am glad this "Memorial Tablet" has been placed in the building, which must have been dear to him from long association.

These few lines are prompted by a warm regard, and deep feeling of respect for the one whose memory you have so appropriately honored.

Yours very truly,
MRS. GEO. C. FITCH.

After several other letters together with the above had been read, the company passed to the hall to examine the tablet which had been unveiled.

At the close of the exercises a collation was served in the library, after which the party adjourned.

NOTE.—The accompanying heliotype illustration of the memorial tablet is from a photograph made by Mr. Andrew B. Cross of Salem, under a Thomsom-Houston Electric light of 2,000 candle power, kindly loaned for the purpose by the Salem Electric Lighting Company.

SELISH MYTHS.

By W. J. Hoffman, M. D.

Introduction.

The accompanying stories were obtained from the Flathead, or, more properly speaking, Selish Indians, consisting of one of the tribes composing the eastern division of the Selish linguistic stock, and who occupy the Jocko Valley, in Montana, at the eastern base of the Rocky Mountains. The Selish, as well as all other native tribes, are extremely fond of passing the long winter evenings in story-telling, and to attempt to record the events of one evening would be an arduous task. A few myths have been selected for this paper, and for the purpose of illustrating the language, as well as the syntactical structure, but a single narrative is submitted in the original text. It is proper to state that these Indians, when speaking of the various animals and birds and their participation in various transactions and exploits, do not look upon them in any other light than that of human beings who lived in remote times. One reason why we hear such expressions as "A Panther married a Salmon," or "The Bear killed the Gopher," is because an individual named "The Panther" married the daughter of another called the "Salmon;" though generally, these names are not personal names but relate to the gens or clans of which the respective persons were members. According to tribal laws, no one is permitted to marry within the gens, but always selects a partner from without, the gens being considered consanguineous and descendants from a common ancestor.

In the following text I have adopted phonetic orthography, adding two characters to express sounds not readily reproduced in English, viz.:

χ, the sound of the German *ch* in *nacht*, the Arabic *ghain* or Spanish *mujer*; *q*, being equal to *ch* in German *nicht*. This is a softer sound than the preceding which is coarse and guttural.

Sĕn′-tshĕ-lē′ kō′-tump't.
[of the] Coyote Story.

Sĕ-huist′-tsĕn'tshĕ-lēp | [and] | ō-wĕ′-tshĕs
He was walking, the Coyote | | he saw

skō-lē′-pī* | tō-ō′-sĕ, | hui′-huē-iu′;
they were cooking | eggs, | many animals and birds;

s'ā-a-tsu′*q*ts | wē-titsht′ | es-tsī-ā′
he looked | while they went to sleep | all of them

u-*q*ŏl′-lŭ sĕn′ -tshĕ′-lē′ | [and] | t'l′-kĕn-tēs′
he went the Coyote | | removed the dirt [from the eggs].

t'lŭs-kăl-ēp′. | U-il′-*q*īs | tsūs′-pĕn-ōs;
from the cooking place. | Then he ate | everything;

o-ko-ĕs′ | l'hui′-hue-u-*q*l's | [and] | ē-huĕ′-u-*q*l'sts
[then] he took | the little bird† | | he pulled [crosswise

χ'lus′-pē-lĕm′-tsĭs; | o'k-tsō′-tsĭs | [of] | χlūs′-ĕn'k-tsū′;
the bill; | he pressed [the head | | the Lynx;‡

sō′-tūmst | sō′-pŏt | [of] | χlŏs′-*q*tī-sŭ′-mĭ-ĕ;
he pulled [stretched]. | the tail | | the Panther;¶

o-wĕ'wĭ′ | kwa′-wĭ-liχlts′ | χlŏs′-tshi-tshi-ma′-u*q*ts;
the Meadow [Lark | yellow breast | the breast he made;

ō-huīst′-χlu′	sĕn′-tshĕ-lē′	tshĭl-kūt′
he walked away	the Coyote	a short distance
χlăk′-tshīlsht	[and]	wĕ-χ′l-stla′-χlsht.
he sat down		he looked at them.
Kă-liqts′		χlu-hui′-huē-χults.
They awoke		all the birds and animals.
Sē′-tsĭsh-tshēl′,		ha′-χlĕ
What is the matter,		already
klĕ′-kĕ-o′-vĭ-tsĕ		ū′-kĕ-tītsh′?
we ate all		before we went to sleep?
Wē′-kŏl-kwĕ′-tshi-nă′,		ta′-sĭn-sō-huī′-nĕ-mĭn-tēm′.
Talked one,		they could not understand him.

Kwēmt′-po-mĭn-tsūqt.
Then they all scattered.

THE COYOTE AND THE MUD-HEN.

THE Coyote was one time compelled to hunt for food, and while strolling along the shore of a lake, observed a great variety of water fowl only a short distance from land, but still too much exposed to be approached without detection. He found some broad leaves growing in the water, took a quantity of them with which he covered his body, and crawled slowly along the edge of the water to the point opposite, and nearest to, the birds. The Swan caught sight of the Coyote as he was approaching and called out to him, saying, "Coyote, what are you doing with that load on your back?" to which the Coyote replied, "That is my music." "That is queer looking music," said the Swan, "let us hear your song, so that we may learn to know your voice." "I cannot do it now," the Coyote replied, "but if you will come to my lodge this evening, which I shall build here on the bank, I will sing for you and we can have a dance." The birds agreed to come, and

the Coyote immediately left and began to erect his lodge, securing all the coverings and closing all the small openings so as to prevent the escape of any one within, except through the doorway.

After sunset the birds began to arrive, entered the lodge and took their places around the fire. When all had come, and the lodge was full, the Coyote said "Now we will have to put out the fire so that none of us get burnt by treading on the hot coals." The fire was then extinguished, when the Coyote took his place at the door, telling the birds to dance around in a circle while he sang for them. The Coyote sang, and the birds danced, passing around and by the door where the Coyote was stationed where he grasped the birds, rapidly as possible, by the necks which he broke, throwing the bodies on the outside. After a while one of the Ducks said, "Where are all our dancers, I hear but a few? light the fire so that we may see what is going on." Then the Coyote built another fire that he might catch the other birds, but when they saw their companions lying dead on the outside of the lodge, they cried out that they were being exterminated, and made a rush for the door, the last one to leave being the Mud-Hen, and as it stooped to pass through the door, the Coyote kicked it on the legs so that the joints protrude awkwardly toward the tail even to this day.

The Ponkas have a myth somewhat resembling the above, but which has reference to a change of the color of the eyes of the Turkey, which corresponds to the Dakota myth relating to a similar change in the color of the eyes of the Wood Duck.

HOW THE LYNX GOT HIS BROAD FACE.

THERE was a great chief, the Panther, who had a beautiful daughter. One day there was a gathering of the whole tribe when each animal tried to obtain her for his

wife. The Bear proposed to the Panther for his daughter, but he would not listen. The Rabbit also tried, but in vain, as did all the others. When night came on, the Lynx sat thinking, when all at once the thought came to him that he might behold the Panther's daughter, even if he could not marry her, whereupon he left his own lodge and proceeded to that occupied by her. Then he carefully crawled upon the lodge and looked down through the opening left for the smoke to issue, where he saw the Panther girl asleep, with her mouth wide open. The Lynx sat in wonder looking at the beautiful girl, and while he was panting from the exertions in ascending the lodge, some saliva dropped down into her mouth, which caused her to have a child, in due time, which could not be stopped from crying.

The Panther Chief tried to quiet his grandchild, but could not; the daughter tried, but failed, as did all the rest of the Panther's family. No one could be found who could be chosen as the father of the crying child. Then the Panther Chief called together all the young men of the tribe, and said, "Go you, all of you, and try if you can quiet my Grandchild, and the one in whose embrace it ceases to cry, shall be the father of my Grandchild and the husband of my daughter." Then the Bear tried to quiet the child but could not; the Rabbit tried and failed; and all the rest of the young men met with no success. The Coyote came last, and when he took up the child it became quiet at once, when the Panther Chief said, "Coyote, the child is yours, and you must take my daughter for your wife." This was as the Coyote desired, but when he attempted to take his wife away, all the young men, who had been repulsed in their previous attentions to the Panther girl, set upon the Lynx and beat him to death and scattered the pieces.

Then the tribe moved off to a distant camping place, leaving the Panther girl with her child and murdered husband to themselves. Then from the pieces of the Lynx lying about, came a voice directing her to place them together as well as she could and to set the mass in a corner of the lodge, and to cover it with soft robes where it should remain for five days. The wife did as she was told, and sat despondently in the lodge waiting for the time to elapse when she could again have her husband restored to her. On the third day, the wife, who had become very lonely, approached her husband and asked, "May I remove the robes to look at you?" "No," responded the Lynx, "wait two days longer and I will be well." Then she pressed the robes closely about him and pressed them upon his head to keep him warm. On the fourth day, the wife again approached the corner in which her husband was, and said, "May I remove the blankets and take you out, I am very lonesome?" "No," responded the Lynx, "wait one day longer and then I shall be quite well." On the morning of the fifth day, the Panther again approached the Lynx and said, "May I remove the blankets and take you out, I am so lonesome that I can wait no longer?" but before the Lynx could reply that the day was not yet over, she had removed the coverings to liberate her husband, when he immediately came forth, but his face was still broad and flat from the pressure of the blankets put upon it, and so it remains to this day.

In the meantime the tribe, who had removed from the old camping ground, had suffered much from want and privation. Many had starved to death, and many more were dying. The Magpie happened to return to the old camp one day, and found that the Lynx and his family had all the meat they could eat; in fact they had so much that everything was greasy with the fat that had been thrown

from the lodge. Then the Magpie gathered up a great quantity of meat, returned to his camp and fed the tribe. The Panther Chief then said, "Where did you find meat, we have none in our country?" "I went hunting," answered the Magpie, "and killed some game." The other hunters now demanded the truth, as they did not believe the Magpie's story.

Then the Magpie narrated his journey to the old camping ground, saying "the Lynx and his family have all they can eat. They have all the meat they can want, and more too, in fact they have so much that everything in their camp looks greasy." "Then we shall return to them," said the Panther, "get you everything together that we can take with us and let us leave at once." After all were ready to leave, the Panther said, "come, let us start for our old home," and they set out. After a long journey, the tribe came in sight of the lodge owned by the Lynx, and soon every one was glad, for the Lynx and his wife came out of the lodge and welcomed them back.

HOW THE RABBIT HAD HIS LIP CUT.

One day the Rabbit happened to visit a neighboring camp, where he saw a beautiful girl with whom he immediately fell in love. He at once started to catch her, but she ran very fast, and the faster the Rabbit ran in pursuit the faster went the girl. The young men of the tribe, seeing a stranger chasing their favorite, immediately gave chase, and when they got near enough, began to throw stones and clubs at the Rabbit, until finally one young warrior hurled a club which hit the Rabbit below the nose slitting the upper lip, which has not healed to this day.

THE COYOTE AND THE FISHES.

The Coyote one day stood upon the bank of a large river in which he saw many white fish swimming about. Then he said to them, "Go, tell your people to come to

my lodge which I shall build here on the bank, and to play with me. I shall look for you to-morrow." The fish said they would go, and immediately disappeared in deep water. The Coyote was a great gambler, but did not suppose the fish would be able to come on land, still, he built a lodge as he had told them he would do. Next day great numbers of all kinds of fishes came swarming from the river and entered the Coyote's lodge. Then they began to play, and played until the Coyote had lost everything he owned, even his clothing.

When the Fishes were ready to go, one of them said, "Coyote, come and see us under the water to-morrow, and we will play again." The Coyote said that he would come, though he knew he could not go under the water, neither did the Fishes believe that he would come. Then the Coyote went away very sad, when the Fox, his cousin, met him and said, "Brother, why are you so sad?" "I am sad," replied the Coyote, "because I lost everything I owned yesterday while playing with the Fishes. I cannot recover the things, although they invited me to come and play with them to-day." Then the Fox said, "if that is all, I will take you under the water, and we can go now;" so the Fox took his pipe, put the Coyote into the bowl and covered it with clay. Then the Fox got into a canoe and paddled out into deep water, when he jumped overboard and sank to the bottom, where he took the Coyote out of his pipe, and they started to visit the camp of the Fishes, which they soon found.

The Coyote then began to play with the Fishes, and continued gambling until he had recovered all he had lost the day before, and had won everything from the Fishes that could be carried away. Then the Fox again put the Coyote into the bowl of his pipe, ascended to his canoe, and returned to the shore where he liberated his cousin, the Coyote.

THE COYOTE AND HIS NEIGHBORS.

The Coyote had five sons with his wife, and lived in a lodge a great distance from any other habitation. One morning he took his youngest son and started to visit the Elk, who also had five sons. When, after a long journey, they arrived at the Elk's lodge, they found it empty and no signs of anything to eat. Then the Coyote said to his son, "I do not like this, not having anything to eat after such a long walk." Soon the Elk returned and after welcoming his visitors, stooped and picked up a sharp stick with which he began to tear open his hips to dig out some Kamass roots. The Elk then said "Eat some Kamass roots, they are very good; I always provide myself in this way when I am away from home and get hungry." "What," said the Coyote, "do you expect me to eat dung?" "That is not dung," said the Elk, "but Kamass roots." Then the Coyote picked up one of them, and after nibbling at it cautiously, discovered it to be very good, whereupon he and his son filled their bellies with Kamass.

When the Coyote was about to depart, he said to the Elk, "Come and see me to-morrow, and see how I live." "Yes," responded the Elk, "I will come to see you to-morrow."

Next morning the Elk took his youngest son and set out for the Coyote's lodge which he reached after a long journey. After the Elk was welcomed, the Coyote took a sharpened stick, as he had seen the Elk do, and commenced to tear his flesh in a painful manner, when the Elk cried, "Stop! stop! do not tear yourself so; I do not think you ever tried that before. It is *my* practice always to do that when I am away from home and get hungry, so let me provide the Kamass roots this time." "That is just what I wanted you to do for me," said the Coyote, and handing the stick to the Elk, they soon had enough Kamass for all,

and after they had filled their bellies, the Elk and his son left for home.

Next day the Coyote said to his youngest son, "Let us call on our neighbor, the Bear, and see how he lives." So after telling his wife of his plan, the Coyote and his son started, and after a long journey, reached the Bear's lodge. Then the Bear welcomed his visitors, when the Coyote said "I do not see anything to eat, and we are hungry after our long walk." The Bear then got down a large knife, and after sharpening the edge against another stone,[1] walked up to his wife and, grasping her by the hip, cut out some large slices of meat, which was soon broiled on the coals and served. The Bear then took up a handful of earth which he rubbed over the wound on his wife's hip, when it instantly healed and was covered with hair as before. Then the Bear said, "This is the way I always provide myself with meat when I am away from home and get hungry." After they had all filled their bellies with Bear's meat, the Coyote rose to go, and said, "Bear, come and see me to-morrow, and see how I live." "Yes," responded the Bear, "I will come and see you to-morrow."

Next morning, the Bear with the youngest of his five sons, called at the Coyote's lodge and was welcomed. After a short time the Coyote arose and got a knife, which he sharpened on another stone, as he had seen the Bear do; went up to his wife, grasped her by the hip, and cut her almost to pieces during which she screamed with pain. Then the Bear cried, "Stop! stop! why are you doing that? I do not think you ever tried that before. It is *my* practice always to do that when I am away from home and get hungry, but you have never tried it before." Then the Bear took the knife and cut a large quantity of meat from

[1] It is evident from the use of this term that stone knives were used at the time to which the myth relates.

his own hip, after which he took up a small handful of earth, rubbed it upon the wound, which healed instantly and was covered with hair as before. "That is just what I wanted you to do," said the Coyote. After the piece of meat had been broiled on the coals, they all ate until their bellies were full, when the Bear arose and started for home.

On the next day, the Coyote took his youngest son, and started to visit the Kingfisher, who lived at a very great distance. They were both very tired and hungry by the time they reached the Kingfisher's lodge, but, when they had been welcomed, they were pleased to see preparations for something to eat. The Coyote was astonished to see how the Kingfisher and his family all had their hair arranged in top-knots, but said nothing. The Kingfisher told his youngest son to collect some willow poles and to erect a platform on the top of the lodge, which he immediately proceeded to do.

Then the Kingfisher flew to the top of the lŏdge, which was located near the river, and after watching a small opening in the ice for a short time, suddenly flew toward and into the hole, disappearing under the water. Soon he returned bringing a fine large fish in his mouth, which was broiled on the coals and served. After they had all filled their bellies with fish, the Coyote arose to go and said, "Kingfisher, come and see me to-morrow, and see how I live." "Yes," responded the Kingfisher, "I will come and see you to-morrow."

Next morning, the Kingfisher and his youngest son started to visit the Coyote, whose lodge they reached after a very long journey. The Coyote had been very much occupied all the morning in tying his children's hair into little tufts on the tops of their heads; when his wife said, "What are you doing with the children's heads?" "Oh,"

replied the Coyote, "I am only doing honor to the Kingfisher who is coming to see us to-day."

The Kingfisher was welcomed, and the Coyote, thinking it time to have something to eat, called to his youngest son and said, "Go and gather some willow poles and erect a platform on the top of the lodge," which he immediately proceeded to do. When it was finished the Coyote ascended the lodge, crawled on top of the platform, and jumped off into the river, but the water being covered with ice, he almost crushed his head and lay some time badly hurt. The Kingfisher, though too late, cried, "Stop! stop! why are you doing that? I do not think you ever tried that before. It is *my* practice always to do that when I am away from home and get hungry, but you have never tried it before." Then the Kingfisher broke a hole in the ice, ascended the platform and so dived into the river, soon returning with a fine large fish, which was soon broiled on the coals and served. Then they all ate until their bellies were full, when the Kingfisher and his son returned to their home.

After this, the Coyote continued to hunt his food as he had been taught by his forefathers.

THE SALMON AND THE WOLF.

The Panther's youngest daughter was a very beautiful girl, whom all the young men of the tribe desired to marry, but whose offers the Panther refused, one by one. To avoid the necessity of constantly refusing these applicants, the Panther said, "Any one who will break my Elk-horns shall have my daughter." This news soon spread to neighboring camps, and a day was set for the trial of breaking the "magic" Elk-horns. The Bear came forward, grasped the horns and crushed them into small pieces, but when

he threw them upon the ground they immediately flew together and the horns were entire, as before. Then the Rabbit took the horns and crushed them, but he had no sooner thrown them upon the ground than the pieces had again united. Then the Lynx tried, and the Coyote, and all the rest of the young men present.

The Salmon had heard of the beautiful daughter of the Panther, and decided to try to obtain her, so he brought with him two friends, the Kingfisher and the Blackbird.[2] The Salmon lived upon a large river at a great distance from the Panther's village, and he did not reach that place until all the young warriors had failed in their trials for the Panther's daughter.

The wolf,[3] who lived far to the south, had two elder brothers, and these three also started for the Panther's village, arriving there at the same time as the Salmon and his friends. Then the Wolf said, "Salmon, you came first, you break the horns if you can," but the Salmon refused, saying, "No, Wolf, you came before I did, you break the horns if you can." Then the oldest Wolf tried, broke the horns, but they immediately became whole again when thrown upon the ground. Then the next wolf tried, but with no better luck. The Wolf whose trial now came was a Shaman,[4] and felt sure of winning the girl, so he picked up the horns, broke them into small pieces, but when he threw them upon the ground they slowly united as before. Then the Salmon came forward, took the horns, broke them into small pieces and threw them upon the ground where they remained and did not unite again. Then

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[2] This Blackbird is said to have peculiar eyes and habits, and evidently signifies the *Pipilo megalonyx*.

[3] *Canis occidentalis*, commonly known as the Grey Wolf.

[4] Improperly termed "Medicine Man."

the Panther said, "Salmon, you broke the horns, you take my daughter for your wife." Then the Salmon took the Panther girl under his arm and with his companions, started for home. They had not gone far, before the Wolf and his elder brothers followed the Salmon and began to fight. They fought two days and two nights, during which time the Salmon and his friends gradually worked their way toward the river. On the third morning, just as the Salmon reached the bank of the river, the Rattlesnake, who lived on the opposite shore and who was a cousin to the Wolf, came out of his lodge, and seeing his cousin the Wolf fighting, took an arrow and shot it at the Salmon striking him in the side of the neck. The Salmon fell down near the water's edge, while his friends were compelled to leave because the Wolf and his elder brothers came and took away the Salmon's wife and went home.

The fishes came and threw water on the Salmon, which kept him alive, and after a while he worked his way into the water and swam down to the Fish Hawk's camp. The Fish Hawk welcomed the Salmon and healed his wound, though he remained there a whole year.

When the summer came again, the Salmon said to the Fish Hawk, "Fish Hawk, when you fly away from home, do you ever see anything of my enemy, the Wolf?" "Yes," said the Fish Hawk, "I see him sometimes; he is a great hunter and kills many deer." Then the Salmon took the arrow with which he had been wounded, and set out to visit the Rattlesnake, who lived in a grass lodge. When the Salmon came near the lodge he listened and heard the Rattlesnake singing, telling how he killed a great Shaman, the Salmon, and gave the Wolf the victory. Then the Salmon went nearer to the lodge, coughed so as to attract the Rattlesnake's attention, when the Rattlesnake peeped

out to see who was coming. When he saw the Salmon he was much surprised, but came out and pretended to welcome him, saying, "Why, Salmon, I thought you had been killed last year, and I have been singing your death-song, and telling my friends how sad I was." Then the Salmon laid down the arrow with which the Rattlesnake had hit him, saying, "Rattlesnake, is this your arrow?" "Yes," said the Rattlesnake, "where did you find it?" "I found it down on the shore." "Oh!" replied the Rattlesnake, "I lost that yesterday while shooting ducks, I knew that it must have fallen somewhere, but could not find it." Then the Salmon said, "Give me some hot coals, Rattlesnake, I want to mend my boat with pine gum before I leave this place." Then the Rattlesnake brought out some hot coals, which the Salmon took and set the grass lodge on fire, and as the Rattlesnake was burning, said to him, "Rattlesnake, hereafter when more people come into your country you must not bite them with your arrows, but they must kill you wherever they find you or your people." Then the Salmon left and travelled a long distance when he saw the Wolf's lodge. He crawled up very slowly and found the Wolf's wife alone, but guarded by the Louse and the Flea. Then the Salmon said to the Louse, "I am the husband of the woman in that lodge, and if you will assist me I will give you the Wolf's head for your share," and to the Flea, "you shall have the Wolf's back and rump for your share." They both agreed to accept the offer and allowed the Salmon to enter the lodge. Then the Salmon and his wife planned how they should destroy the Wolf, as well as his two brothers who lived in the lodge also. The Salmon took a sharp knife and waited. Towards evening the oldest wolf returned carrying a deer on his shoulders, which he threw into the lodge and then went

away to wash his hands. He then returned and as he put his head into the door of the lodge, the Salmon struck him over the forehead with the knife and killed him. The woman then dragged the body back into the lodge where she covered it with robes.

Soon the next Wolf came, having a deer upon his shoulders, which he threw into the lodge and then went to the spring to wash his hands. He then returned and as he put his head into the lodge, the Salmon cut off his head. The woman then dragged the body into the lodge and hid it with the body of the oldest Wolf.

After a long time the youngest Wolf, who was a Shaman, returned with a deer upon his shoulders. His magic power enabled him to know that the Salmon was in the lodge, and he called out, "Salmon, come out of my lodge, I know that you are there and want to kill me; come out that I may fight you." The Salmon did not answer, and the Wolf came closer and again called out as before. The Salmon remained silent; when the Wolf came up and threw the deer into the lodge and went to the spring to wash his hands. When he again came toward the lodge, he said, "Salmon, I know you are in my lodge and want to kill me; now come out and fight me." The Salmon remained quiet, but after a short time asked the woman if the Wolf did not possess some charm or sacred rattle, by which means the Wolf could be induced to enter the lodge. The woman said that the Wolf had a rattle which, if used, would probably bring him in; whereupon she took it down and began to use it, at the same time telling the Wolf to enter the lodge, as she was going to throw the rattle into the fire. The Wolf then came nearer but would not enter until he saw her throw the rattle upon the burning coals, when he made a leap through the door, the Salmon at the

same time striking him upon the nose and splitting his body lengthwise, one-half falling upon the floor, while the other half sprang upon the fire, grasped the sacred rattle and passed up through the smoke-hole and onward to the summit of a high mountain.

Then the Salmon took his wife, and after giving the heads of the wolves to the Louse, and the backs and rumps to the Flea, returned to his own home.

There was a village near the base of the mountain upon which the Wolf took refuge, and every night the people could hear him howl. Then the Coyote said, "I wonder what can be wrong with the Wolf, he is crying so much." Then several of the people went to find the Wolf's lodge to take him some food, but he could not be found. Soon, people were attacked by the Wolf at night, and so many were killed that the Chief said, "Let us move away to another camp, if we stay here we shall all be killed." Then the Coyote said "You must all go, but let me remain, I will kill the Wolf." The tribe then moved away and the Coyote, who was a Shaman, transformed himself into a little boy. He dug a pit in the ground at the bottom of which he placed a log of wood, which he transformed into a dead man. Then the Coyote sat at the mouth of the pit and cried. When the Wolf heard a child crying, he came down from the mountain and, seeing the little boy, said, "Coyote, I know that is you, what is the matter with you?" But the Coyote only cried the harder and pointed down into the pit. Then the Wolf approached and asked, "Is that your father?" when the Coyote assented by nodding his head and crying still louder. Then the Wolf jumped into the pit, which the Coyote at once caused to sink deeper and deeper, so that the Wolf should not escape. The Coyote then took his knife and, as the Wolf jumped

up the sides of the pit to make his escape, the Coyote thrust the blade into the Wolf's head and killed him. The pit was then filled with dirt and leaves, and the Coyote returned to his camp, summoned his people to return, which they did; and there they still live in peace.

NOTES.

*Skō-lē'-pĭ. This signifies cooking in a depression in the ground, similar to the method adopted in preparing Kamass roots in the northwest, and mescal roots in Arizona. Hot stones form the floor of the pit, upon which the roots are laid, and covered with a layer of stones, earth, grass, etc.

† l'hui'-hue-u-*q*l's. The Cross-bill (*Curvirostra Americana*). It is said that at this time the bird had his mandibles distorted, which rendered his speech unintelligible to the others.

‡ χlŭs'-ĕn'k-tsū'. The Wild cat (*Lynx rufus*) frequently called Lynx, by the Indians. The word for the latter is sĭn'-χŭ-tsō'. This act of the Coyote is supposed to account for the flat face of the animal.

¶ χlŏs'-*q*tĭ-sŭ-mĭ-č. The Panther (*Felis concolor*) is said to have received his long tail at this time, having previously been a Lynx (*L. Canadensis*).

1858

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 15. SALEM: APRIL, MAY, JUNE, 1883. NOS. 4, 5, 6.

THE JESUITS.[1]

BY GEORGE H. HOSMER.

MR. HOSMER first spoke of the Romish church previous to the year 1500; of the corruption in the church and of the vast treasures poured into Rome by the immense number of persons flocking to the eternal city. St. Peter's was commenced and partly paid by this treasure. The Reformation under Martin Luther was next briefly traced, and the excitement caused by the protest of 1517 by Luther against the sale of indulgences. In 1491 Ignatius Loyola, the founder of the Society of Jesus, was born. He was of royal family and soon became famous as a bold and chivalrous gentleman and soldier, displaying great valor in war. In 1521, he suffered from a long and painful illness, the result of a wound, during which time he became interested in reading the lives of the saints and his thoughts were directed towards a religious life. From

[1] [An abstract of a paper read at a meeting Monday evening, April 2, 1883.]

an active life in the field and from the emoluments of the court and camp, he turned his future to the austerities of the monastery and devoted himself to the formation of the Society of Jesus and the propagation of its doctrines throughout the world. With Peter Faber, Xavier and five others, the society was founded and missionary work commenced. After varying fortunes the Pope recognized the order, Loyola having been chosen supervisor. The society spread and became a power, and while Loyola lived it was for good; after his death the Jesuit order became corrupt as it grew in wealth and influence.

This year (1883) is the two hundred and fiftieth anniversary of the settlement of the Jesuit order in America. Marquette came to America and preached from the St. Lawrence to the Mississippi river, which last he is said to have discovered. The Jesuits also accompanied Lord Baltimore to Maryland in 1632. There were, in 1874, seventeen Jesuit colleges in the United States, and the sect numbered about 1062 persons.

ANNUAL MEETING, MONDAY, MAY 21, 1883.

THE annual meeting this evening at 7.30 o'clock. The PRESIDENT in the chair. Records of the last annual meeting were read and approved.

The reports of the Secretary, Treasurer, Auditor, Librarian, and the Curators and Committees were read, and duly accepted and ordered to be placed upon file.

Mr. T. F. HUNT, chairman of the committee upon nominations, reported the following list of officers, which was duly elected. Messrs. T. F. HUNT and F. ISRAEL having been requested to collect, assort and count the votes.

OFFICERS ELECTED.

PRESIDENT:

HENRY WHEATLAND.

VICE-PRESIDENTS:

ABNER C. GOODELL, JR. — DANIEL B. HAGAR.
FREDERICK W. PUTNAM. — ROBERT S. RANTOUL.

SECRETARY: GEORGE M. WHIPPLE.

TREASURER: GEORGE D. PHIPPEN.

AUDITOR: RICHARD C. MANNING.

LIBRARIAN: WILLIAM P. UPHAM.

CURATORS:

History—HENRY F. WATERS.
Manuscripts—WILLIAM P. UPHAM.
Archæology—FREDERICK W. PUTNAM.
Numismatics—MATTHEW A. STICKNEY.
Geology—B. F. MCDANIEL.
Botany—GEORGE D. PHIPPEN.
Zoölogy—EDWARD S. MORSE.
Horticulture—JOHN E. PEABODY.
Music—JOSHUA PHIPPEN, JR.
Painting & Sculpture—T. F. HUNT.
Technology—EDWIN C. BOLLES.

COMMITTEES:

Finance:

The PRESIDENT, *Chairman ex off.*

HENRY M. BROOKS. GEO. R. EMMERTON. DAVID PINGREE.
The TREASURER, *ex off.*

Library:

CHARLES W. PALFRAY. HENRY F. KING. WILLIAM NEILSON.
WILLIAM D. NORTHEND. THEODORE M. OSBORNE.
The LIBRARIAN, *ex off.*

Publication:

EDWARD S. ATWOOD. ABNER C. GOODELL, JR. EDWIN C. BOLLES.
H. F. WATERS. JAMES A. EMMERTON. T. F. HUNT.

Lecture:

ROBERT S. RANTOUL. FREDERICK W. PUTNAM. AMOS H. JOHNSON.
FIELDER ISRAEL. ARTHUR L. HUNTINGTON.

Field Meeting:

The SECRETARY, *Chairman ex off.*

GEORGE A. PERKINS, Salem.
GEORGE COGSWELL, Bradford.
FRANCIS H. APPLETON, Peabody.
NATHANIEL A. HORTON, Salem.
EDWARD S. MORSE, Salem.
GEORGE D. PHIPPEN, Salem.
FRANK R. KIMBALL, Salem.
EBEN N. WALTON, Salem.
WINFIELD S. NEVINS, Salem.
JOHN H. SEARS, Salem.

RETROSPECT OF THE YEAR

compiled from the several reports read at the meeting and the remarks by several members in relation thereto, presents the work of the Institute in the various departments since the last annual meeting.

The past year has been one not specially eventful in the annals of the Institute, and there have been no important commemorative or social observances as have occurred in some of the previous years. The ordinary work of the society has gone smoothly. The various Regular and Field Meetings have been well attended. The publications have been issued with pages well filled with valuable historical and scientific papers. Our membership has held its own. Generous donations to the library, cabinet, and the treasury have been made. The number of visitors to the rooms has been large and the year may, with propriety, be called a prosperous one.

MEMBERS.—Changes occur in the list of our associates by the addition of new names and the withdrawal of some by resignation, removal from the county or vicinity, or by death.

MEMBERS ELECTED MAY 1882 TO MAY 1883.

1882, June 20 GEORGE BURNHAM IVES, Salem.
" " " CHARLES F. POUSLAND, Salem.
" " " CHARLES A. BUXTON, Salem.
" " " FRANK A. BROWN, Salem.
" " " JEAN M. MISSUD, Salem.
" " " HARRIET KNIGHT KIMBALL, Salem.
" " " HATTIE L. KIMBALL, Salem.
" " " GEORGE RANDALL, Peabody.
" Sept. 5 WILLIAM HENRY GOVE, Salem.
" " " PATRICK J. MC CUSKER, Salem.
" " 19 MYRA HALL, Salem.
" Dec. 5 ESTHER C. MACK, Salem.

1883, Jan. 15 Hannah L. Rantoul, Beverly.
" " " Louise Preston Dodge, Danvers.
" Feb. 5 Edmund Waters Longley, Salem.
" " 19 Lawrence Cunningham, Salem.
" Mch. 5 Benjamin F. Mc Daniel, Salem.
" " " Charles Whitney Haddock, Beverly.
" " 20 Jabez Baldwin Lyman, Salem.
" Apr. 16 Henry M. Meek, Salem.

We have received information of the decease of fifteen during the year, who have been resident members.

Oliver Carlton, son of John and Mary (Weston) Carlton, born at Mount Vernon, N. H., July 20, 1801; graduated at Dartmouth college, 1824; a well known and distinguished Principal of the Latin School in Salem for many years; taught at Francestown, in 1825; tutor in Dartmouth, 1825–6; taught at Windsor, Vt., in 1827; Haverhill, Mass., Marblehead, Salem, Portsmouth, N. H.; and again at Salem; died at Salem, June 21, 1882.— Elected a member June 21, 1848.

George Foster Flint, son of Addison and Mary E. (Foster) Flint; born at North Reading, Oct. 17, 1840; studied law in the office of George Wheatland, counsellor at law, Salem, and after admission to the Essex Bar, continued in the office, associated with Mr. Wheatland in business until his decease, which occurred June 23, 1882. He was well known as a conveyancer and examiner of titles of real estate. Elected a member Feb. 20, 1861.

Joseph J. Rider, son of Joseph and Abigail (Janes) Rider, born at Salem, June 26, 1827. Master mariner, died at Gorea, West Coast of Africa, July 25, 1882. Elected a member Oct. 13, 1858.

Albion S. Dudley, son of Edmund and Rebecca (Bangs) Dudley, born at Kingfield, Me., Aug. 6, 1816, died at Asbury Grove, Hamilton, Mass., July 12, 1882. Dentist in Salem. Elected a member May 6, 1867.

George K. Proctor, son of James K. and Lucretia (Blood) Proctor, born in Townsend, Mass., July 9, 1837, a photographer in Salem, afterwards a grocer, died at Salem July 27, 1882. Elected a member July 16, 1872.

Robert Brookhouse, son of Robert and Eliza W. (Grafton) Brookhouse, born at Salem, March 3, 1823, merchant in Salem, associated with his father and others in the West Coast of Africa trade, died at his seaside residence in Marblehead, Aug. 2, 1882. An original member.

Elizabeth Endicott (Gray) Newhall, daughter of James and Elizabeth (Endicott) Gray, born at Salem, Feb. 15, 1802; married April 14, 1829, Gilbert Grafton Newhall, merchant of Salem (see Hist. Coll. of Essex Institute, vol. vi, p. 127); died at Salem, Aug. 12, 1882. Elected a member Oct. 8, 1878.

Joseph E. Fiske, son of William and Dolly (Wellington) Fiske, born at Heath, Mass., Feb. 12, 1811. In early life, a teacher in Danvers, afterwards a practising dentist in Salem more than forty-five years, noted for his gift of invention. Died at Salem, Aug. 25, 1882. An original member.

Priscilla S. (Hodges) Clark, daughter of Jonathan and Elizabeth (Ropes) Hodges, born Nov. 4, 1799, married John Clark Sept. 4, 1821, died at Salem, Oct. 12, 1882. Elected a member June 9, 1864. Mr. Clark, son of John and Lydia (Sanderson) Clark, was born in Waltham Mar. 14, 1796, gr. Harv. Coll. in 1816; soon after graduation was teacher of a private school, in Salem, for several years; in 1824 merchant in Boston; in 1830 agent of Merrimac Manf. Co., Lowell; in 1848 Treas. Great Falls Manf. Co., place of residence, Salem, where he died Jan. 28, 1851. (See "Records of the descendants of Hugh Clark of Watertown, Mass.," by John Clark, p. 75.

Augustus Story, son of William and Elizabeth (Patten) Story, born at Marblehead, April 6, 1812, removed to Salem with his parents in 1819, gr. Harv. Coll. in 1832. A lawyer by profession, for many years President and Treasurer of the Holyoke Mutual Fire Ins. Co. Died at Salem Oct. 19, 1882. Elected a member Mch. 29, 1848.

Samuel Calley, son of William and Mary (Becket) Calley, born at Salem, April 14, 1821, a painter; mayor of Salem for the years 1872, 1881 and 1882; d. Jan. 1, 1883. Elected a member June 3, 1872.

William Whitaker, son of William and Sarah (Hariman) Whitaker, born in Haverhill, Mass., Oct. 25, 1797, came to Salem, April 1, 1823, a carpenter; died at Hamilton, Feb. 2, 1883. Elected a member Sept. 21, 1864.

Caroline Saltonstall, daughter of Leverett and Mary Elizabeth (Sanders) Saltonstall, born at Salem, Sept. 2, 1815; died at Salem, unmarried, Feb. 23, 1883. Elected a member July 6, 1864.

James Osborne Safford, son of Ebenezer and Hannah (Osborne) Safford, born in Danvers June 21, 1819, died at his residence in Salem March 18, 1883; he was largely interested in the manufacture and sale of leather; place of business in Boston. Elected a member Jan. 4, 1854.

William Henry Prince, son of John and Loisa (Lander) Prince, and grandson of Rev. John Prince, LL.D., who was pastor of the First Church in Salem 1779 to 1836, and was noted for his scientific attainments, born in Salem, Nov. 15, 1817, gr. Harv. Coll. 1838, and of the Medical School in 1841, commenced practice in Salem; Superintendent of the Northampton State Lunatic Asylum, 1856 to 1864; connected with the water-cure at Clifton Springs,

N. Y., 1870–1878; from 1878 to his decease, a practitioner in Newton, where he died May 15, 1883. An original member.

Field Meetings. These have been, perhaps, of more than usual interest and well attended. During the season four have been held.

First at the Middlesex Fells, Stoneham, on Saturday, June 17, 1882, by invitation of the Middlesex Institute. During the forenoon pleasant rambles were made in the vicinity of Bear Hill, a delightful spot in the Fells, the place selected for the gathering. At 2 P. M. President Dame of the Middlesex Institute called the meeting to order and extended a cordial welcome to the members of the Essex Institute. He spoke of the work and objects of the two societies and alluded to several of the historical points of interest in this locality. Mr. George E. Davenport, secretary of the Middlesex Institute, read a poem entitled "Dame Nature's Greeting." The President of the Essex Institute responded, thanking the members of the Middlesex society for the kind invitation to unite with them on this interesting occasion. Mr. John Robinson of Salem read a paper on our "native trees." Prof. Asa Gray of Cambridge, by invitation from the chair, gave some reminiscences of Darwin and his teachings, and alluded to a recent visit to him in England. Appropriate remarks were made by Mr. John H. Sears of Salem, Rev. Joseph Banvard of Neponset, Mr. Williamson of Kentucky and others. Mr. Sears spoke of the plants noticed this day; Mr. Banvard, of the benefit of these meetings, and Mr. Williamson, of the flora of his own state and that of Massachusetts.

Second, on Wednesday, July 12, 1882, at the Dummer Academy, Byfield, by invitation of the Trustees. This

school was organized in 1763 in accordance with the will of its patron and founder, Lieut. Gov. William Dummer,[1] under the direction of Samuel Moody,[2] its first principal, who held this position for thirty years and was a very successful teacher. During that period, the number of his pupils averaged over seventy.

A renewed effort has recently been made to restore to old Dummer its pristine glory and reputation.

Under the recently appointed head, John W. Perkins, for several years the accomplished principal of the Classical and High School in Salem, the prospects are encouraging for a realization of the sanguine hopes of the trustees and its friends, in the accomplishment of this so praiseworthy and desirable an object.

A pleasant ride by rail to Newburyport; thence by covered barges to the place of meeting, passing through a region of great natural attractiveness and rich in historic lore; a cordial reception by the trustees and Mr. and Mrs. Perkins, now comfortably domiciled in their new residence; a generous lunch at noonday; and the afternoon speaking of a pleasant character, and in general, having reference to the past history of the institution and its future prospects, with frequent allusions to those of its graduates who have well done their part in the great drama of life; will

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[1] William Dummer, Lieut. Governor of the Province, and the acting Governor 1723-28, m. Catherine, dau. of Gov. Joseph Dudley, died 10 Oct., 1761. This farm was his country seat and the mansion house was his residence. These were included in his bequest for the foundation of the Academy. He was the son of Jeremiah Dummer, and a grandson of Richard Dummer of Bishopstoke, Hants, who was born there in 1599, came to New England in 1632 and was one of the first settlers in Newbury; he returned to England and came again in 1638.

[2] Rev. Samuel Moody,[5] the preceptor of Dummer. Harv. Coll., 1746; died at Exeter, N. H., Dec. 14, 1795, aged 70 years. He was son of Rev. Joseph,[4] of York, Me., Harv. Coll., 1718; a grandson of Rev. Samuel,[3] Harv. Coll., 1697; a gr. grandson of Caleb[2]; a gr. gr. grandson of William[1], who came in 1634 (it was said a saddler) from Ipswich, Co. of Suffolk. He was first of Ipswich, afterwards in 1635 of Newbury, where he continued to reside. He died 25 Oct., 1673.

render this day one to be long remembered by all who were present on this interesting occasion.[3]

Third meeting at Magnolia, on Wednesday, August 9, 1882. This place has been, for a long time, a favorite seaside resort. The old road was a pleasant drive, bordered with the wild rose and other flowering plants, with occasional hamlets, whose occupants obtained their livelihood from the land or the briny deep, winding through these fragrant woods and skirting the borders of the green fields that come down even to the beaches that are hard and smooth, and to the rocks whose hoary cliffs extend into the sea, scarred, wrinkled, and worn.

This territory, especially that portion contiguous to the coast, has for the most part, within the past few years, been bought by the wealthy denizens of the city who make this their summer home. The elegant villas, recently built, with their quaint architecture dot the coast, and with their red roofs are in striking contrast with the sombre green of the woods. The name of this locality has also, recently, been changed, and instead of Kettle Cove we have Magnolia, appropriately named from the beautiful flower, whose northern habitat is in close proximity. These woods extending inland from the coast, diversified with ponds and inlets, rocky hills and meadows, the habitat of many rare plants, have been made famous by the herborizations of William Oakes of Ipswich, a very distinguished botanist, who died in 1848, leaving an extensive collection of beautifully prepared specimens of our native flora with many valuable notes and observations. Peter Magnol of Montpellier, France, a very distinguished botanist during the close of the seventeenth and the early part of the eighteenth centuries, in whose honor the name

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[3] See Hist. Coll. Essex Inst., vol. XIX.

of Magnolia was given to this genus of beautiful plants, rendered the herborization of Montpellier celebrated. Many botanists flocked thither desirous to enjoy the society and the benefit of his guidance and instruction.

The forenoon was spent in visiting the interesting localities and in the afternoon the meeting was held in a rustic pavilion, tendered to the Institute by the kindness of Mr. Barnard Stanwood.

The President called the meeting to order, and alluded in a few brief remarks to the meeting held in this place some twenty-one years since and noted the great change that has taken place since that time. Vice President F. W. Putnam, being called upon, gave an interesting account of his recent explorations in Tennessee and Ohio. He urged upon his hearers the importance of collecting Indian relics which are very valuable in any museum, for examination and reference. Mr. John H. Sears of Salem, Dr. Morse of Gloucester, President of the Cape Ann Literary and Scientific Association and Prof. William North Rice of Wesleyan University made pertinent remarks. The latter gentleman alluded to the great difference geologically between this rock-bound coast and the valley of the Connecticut, which was his place of residence and the field of his explorations. A vote of thanks was gratefully tendered to Mrs. Maria H. Bray and Mr. Stanwood for courtesies extended during this pleasant visit to Magnolia.

Fourth meeting, *Wednesday*, *August* 30, 1882. Meeting at Topsfield. The party from Salem went in barges, those from other towns found their way thither by the cars or private carriages. The usual routine was observed relative to the rambles in the forenoon and the visiting of places of interest; the most notable, perhaps, is the old Capen House, now owned by Charles H. Holmes. It is

built upon the old Garrison house principle, and its architecture is like that of two centuries ago. Mr. Holmes says that it was built in 1651. The afternoon session was held in the Town Hall. The President in the chair. Vice President, Robert S. Rantoul of Salem, was introduced and read an interesting paper entitled "The Essex Junto — The Long Embargo — And The Great Topsfield Caucus of 1808."[4] Mr. Charles J. Peabody and Dea. Augustine Peabody of Topsfield gave interesting facts and traditions of the town. Hon. J. J. H. Gregory of Marblehead spoke of Forestry and the cultivation of trees. Mr. John H. Gould read extracts from the records of the town. He is the present town clerk. Samuel P. Fowler of Danvers, now and ever since its organization a member of the Institute, gave reminiscences of its history, stating many interesting facts in that connection. Hon. N. A. Horton of Salem made a few remarks supplementary to Mr. Rantoul's paper. After the adoption of a vote of thanks to the people of Topsfield for their coöperation and courtesies, adjourned.

Meetings. Regular meetings occur on the first and third Monday evenings of each month. At these or special meetings, the following communications were received or lectures delivered.

On *Monday, Oct. 9, 1882*, Mr. Adoniram C. Orne of Marblehead read a paper "On popular errors in regard to the average duration of life."[5]

Monday, Nov. 20, 1882. Mr. John Robinson gave an account of the opening of a shellheap under the direction of the Peabody Academy of Science, on the banks of the Ipswich River; a large and valuable collection of articles

[4] See the Hist. Coll. Essex Inst., Vol. XIX, p. 226.
[5] See Bulletin Essex Inst., Vol. XIV, p. 133.

was found. Many of them were exhibited at the meeting.[6] On the same evening Vice President F. W. Putnam spoke of the results of a search among the heaps on the coast of Maine.[7]

Monday, Jan. 15, 1883. Mr. S. S. Blanchard, formerly of Boston, now of Fargo, Dakota, gave a familiar talk on Dakota, alluding to its resources, the fertility of its soil, its large crops raised with little labor, the mineral products, etc. He also spoke of the social advantages, schools, churches, and other public institutions. Wheat farming was particularly noticed and a large picture of the harvesting of wheat on the Ingraham farm was shown; on these large farms machinery is being largely introduced and farming is reduced to a system.

Monday, Feb. 26, 1883. E. W. Kinsley, Esq., of Boston, spoke informally on Mexico and its business resources. He alluded to the steamers between New York and Vera Cruz in complimentary terms. The beautiful scenery of the country by rail from Vera Cruz through the mountainous districts was fully described and also the magnificent views as one descends into the city of Mexico; the hotels were comfortable and rapidly adopting modern improvements. A visit to one of the large haciendas with the immense crops stored in large warehouses was fully sketched. A very enthusiastic and hopeful account of the Mexican Central and Atchison and Topeka Railroads was given.

Monday, March 5, 1883. Vice President F. W. Putnam spoke on the recent explorations that he had made in the valley of the Little Miami River, in Ohio,

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[6] See Bulletin Essex Inst., Vol. XIV, p. 158.
[7] See Bulletin Essex Inst., Vol. XIV, p. 161.

including an account of the singular altar mounds and the interesting objects found upon the altars. The lecture was illustrated by diagrams, photographs and specimens.

Monday, April 2, 1883. Rev. George H. Hosmer read a paper on "the Jesuits."

Monday, May 14, 1883. Mr. Robert S. Rantoul read a memoir on our late associate member James O. Safford.[8] Rev. Charles T. Brooks of Newport, R. I., read a memoir on our late associate member, Augustus Story.[9]

The following have been presented and printed in the publications:

"Essex County and the Indians," a lecture before the Beverly Lyceum, Nov. 20, 1832, by Mr. Robert Rantoul, sen.,[10] communicated by Mr. R. S. Rantoul.

"Origin of Salem Plantation." Allotments of Land in Salem to Men, Women, and Maids," by Prof. Herbert B. Adams of Johns Hopkins University.[11]

"The Family of John Perkins of Ipswich," by George A. Perkins, M. D.[12]

"Common Fields in Salem," by Prof. Herbert Adams.[13]

"The family of William Townsend of Boston," by Henry F. Waters.[14]

"The Early Settlers of Rowley, Mass., including all who were here before 1662, with a few generations of their descendants," by George B. Blodgette, A. M., of Rowley.[15]

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[8] Hist. Coll. Essex Inst., Vol. XX, p. 81. [9] Hist. Coll. Essex Inst., Vol. XX, p. 115. [10] Hist. Coll. Essex Inst., Vol. XIX, p. 126. [11] Hist. Coll. Essex Inst., Vol. XIX, p. 153. [12] Hist. Coll. Essex Inst., Vol. XIX, p. 213. [13] Hist. Coll. Essex Inst., Vol. XIX, p. 241. [14] Hist. Coll. Essex Inst., Vol. XIX, p. 269. [15] Hist. Coll. Essex Inst., Vol. XIX, p. 297.

"A Note on the authenticity of the Portraits of Gov. Endecott," by Mr. R. S. Rantoul.[16]

"Sketch of the Family of Thomas Townsend of Lynn, Joseph Townsend of Boston, and a few English Notes relating to the name of Townsend, by Henry F. Waters.[17]

"Salem Meadows, Woodland, and Town Neck," by Prof. Herbert B. Adams.[18]

"Notice of Charles Davis of Beverly, Librarian of Essex Institute," by Mr. Robert S. Rantoul.[19]

"Carcinological Notes, No. V," by Mr. J. S. Kingsley.[20]

"Catalogue of the Flora of Oak Island, Revere, Mass., with notes," by Herbert Young; "Introduction and Summary" by Mr. John Robinson.[21]

"Arrow makers at Pine Grove, by Mr. John Robinson.[22]

A Social Meeting of the members and their families was held in the rooms on the evening of Jan. 1, 1883. Mr. Alban Andrén of Beverly gave a familiar talk on Sweden, illustrating his remarks by lantern views. Simple refreshments were served.

Receptions. Wednesday, May 31, 1882. During the evening a reception was tendered to Mr. Raymond Lee Newcomb, on his return to Salem from his perilous voyage to the Arctic regions in the steamer "Jeannette." The large hall on the second floor was thrown open and after a few words of welcome from the President, and an address from Vice President D. B. Hagar, Mr. Newcomb gave a brief account of his trip and related some of the experiences of the expedition. At the close of his remarks Mr. Newcomb was introduced to the members and their families.

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[16] Hist. Coll. Essex Inst., Vol. XX, p. 1. [17] Hist. Coll. Essex Inst., Vol. XX, p. 37. [18] Hist. Coll. Essex Inst., Vol. XX, p. 52. [19] Hist. Coll. Essex Inst., Vol. XX, p. 73. [20] Bulletin Essex Inst., Vol. XIV, p. 105. [21] Bulletin of Essex Inst., Vol. XIV, p. 141. [22] Bulletin Essex Inst., Vol. XIV, p. 163.

On Friday, Sept. 8, 1882, at noon, President Chester A. Arthur visited the rooms. There was no ceremony or formality. A few members happened to be present and escorted him through the building and about the grounds. He was accompanied by his private secretary Phillips, Surrogate Rollins of New York, and Capt. Green of the "Despatch."

Friday, Nov. 10, 1882. Dr. William B. Carpenter, of England, was in Salem, the guest of Robert S. Rantoul, Esq. The forenoon was spent in visiting the State Normal School, the Court Houses, East India Marine Hall, and other objects of interest. In the afternoon he was in the rooms of the Institute where he received calls from ladies and gentlemen of our city.

By the joint invitation of the Institute and the Peabody Academy of Science, the Boxford Natural History Society on Wednesday, May 31, 1882, The President and faculty of Wellesley College, on Monday, June 12, 1882, and the West Newbury Natural History Club, on Oct. 28, 1882, visited Salem on the respective days named, to examine the collections in the East India Marine Hall, the libraries and collections in Plummer Hall and other objects of interest.

Lectures. A course of eight Lectures, under the direction of the lecture committee, has been delivered, as follows: *First*, Alban Andrén of Beverly, "Sweden," Wed., Nov. 22, 1882. *Second*, Frederick A. Ober, of Beverly, "Mexico," Wed., Nov. 29, 1882. *Third*, G. M. Towle, "Eugenie, ex-Empress of France," Wed., Dec. 6, 1882. *Fourth*, G. M. Towle, "John Bright," Wed., Dec. 13, 1882. *Fifth*, G. M. Towle, Wed., Dec. 20, 1882, "The Irish Struggle." *Sixth*, G. M. Towle, "Victor Hugo," Wed., Dec. 27, 1882. *Seventh*, I. J. Osbun,

"Steam," Wed., Jan. 3, 1883. *Eighth*, I. J. Osbun, "The Storage of Electricity," Wed., Feb. 21, 1883.

In addition to the above, by an arrangement made with the Trustees of the Peabody Academy of Science, two courses of free lectures were given. *First course*, by Prof. C. C. Bessey, of the State Agricultural College, Iowa, on Thursday afternoons, Jan. 18, 25, and Feb. 1, 1883, three lectures on "Problems in Vegetable Physiology:" I. "Green slime and yeast Plants." II. "Structural and physiological development of the vegetable kingdom." III. "The evolution of the Flower." *Second course:* five lectures by Prof. J. Walter Fewkes, an assistant in the Museum of Comparative Zoölogy, Cambridge. "Corals and Coral Islands," on the afternoons of Wednesdays, Jan. 17, 24, 31, Feb. 7, 14, 1883.

Concerts. Under the personal direction of the curator of music, two chamber concerts have been given with great acceptance. This was the fourteenth concert season of the Institute. *First*, Friday evening, Feb. 16, 1883. The selections of the two trios by Beethoven and Schubert formed a happy contrast, the latter perhaps being the more brilliant. It was very pleasant to hear Mr. Arthur W. Foote again in Salem after so long an interval. He was ably assisted by Messrs. Gustave Dannreuther, Wulf Fries, and Miss Louise Gage. *Second*, Monday, March 26, 1883. Mr. Hiram G. Tucker, of Boston, gave a piano recital. He had the assistance of Miss Grace F. Dalton, soprano vocalist. Both parties did themselves much credit in their respective numbers and the concert was both enjoyable and interesting.

Excursions. *Friday*, June 9, 1882, visited Plymouth,

tarried at the Samoset House and returned on Saturday in the afternoon. The attractive objects: "The national monument to the forefathers," which stands eighty-one feet from the ground, not finished; Pilgrim Hall, built in 1824, rebuilt in 1880 by the liberality of Joseph Henry Stickney, Esq., of Baltimore, Md., containing many relics brought over by the Pilgrims, and several large and striking paintings, representing the landing and ideas connected therewith; Plymouth Rock returned to the original spot and now covered by a solid granite canopy of elaborate architectural design; Burial Hill and other places of interest, were visited by some of the party.

Thursday, Aug. 3, 1882. A trip along the North Shore to Pigeon Cove in the steamer General Bartlett, Capt. J. O. Davis, commander. The party landed at the Cove and spent about an hour ashore, then across the bay to Swampscott and along the Marblehead shore to the place of departure.

Wednesday, Sept. 6, 1882. A party left for an excursion to the summit of Mount Moosilauke. A special car direct from Salem to Plymouth, N. H., without change, thence to the village of Warren, where the mountain ascent is made on buckboards or in wagons, to the breezy Point House, a bright roomy hotel with broad piazzas and a wide view of the unbroken forest, then to the Tip Top House. This hotel, as well as the Breezy Point House, will be found in all respects comfortable, while the mountain scenery is unsurpassed. Returned on Saturday the ninth.

PUBLICATIONS have been issued as heretofore: the Bulletin, Vol. xiv, and the Historical Collections, Vol. xix. The exchange list, with few exceptions, continues the same as last year.

LIBRARY.—The additions to the Library for the year (May, 1882 to May, 1883) have been as follows:

By Donation.

Folios,	24
Quartos,	160
Octavos,	891
Duodecimos,	296
Sexdecimos,	54
Total of bound volumes,	1,425
Pamphlets and serials,	10,143
Total of donations,	11,568

By Exchange.

Folios,	1
Quartos,	18
Octavos,	95
Duodecimos,	4
Total of bound volumes,	118
Pamphlets and serials,	2,172
Total of exchanges,	2,290

By Purchase.

Quartos,	5
Octavos,	107
Duodecimos,	179
Sexdecimos,	15
Total of bound volumes,	306
Pamphlets and serials,	197
Total of purchases,	503

Total of donations,	11,568
Total of exchanges,	2,290
Total of purchases,	503
Total of additions,	14,361

Of the total number of pamphlets and serials, 6,447 were pamphlets, and 6,065 were serials.

The donations to the Library for the year have been received from one hundred and fifty-six individuals and

forty-one départments of the General and State governments and societies, five of which are foreign. The exchanges from one hundred and fifty-six societies and incorporate institutions, of which eighty-four are foreign; also from editors and publishers.

The annual examination of the Library has been made. Of the eight volumes that were missing last year, five have been returned; thirteen others are now missing from their places.

Donations or exchanges have been received from the following:

	Vols.	Pam.
Albany, N. Y., State Library,	7	1
Almy, James F.,		1
Alnwick, Eng., Berwickshire Naturalists' Club,		1
American Association for the Advancement of Science,	1	
Amherst College Library,		1
Amiens, Société Linnéenne du Nord de la France,		11
Anagnos, M., South Boston,		1
Andrews, Hiram,	5	2
Andrews, William P.,		53
Appleton, F. H., Peabody,		1
Appleton, William S., Boston,		1
Archæological Institute of America,	1	3
Atkinson, Edward, Boston,		1
Baltimore, Md., Johns Hopkins University,	9	
Baltimore, Md., Johns Hopkins University Library of Historical and Political Science,		7
Baltimore, Md., Peabody Institute,		1
Bamberg, Naturforschende Gesellschaft,		1
Bancroft, Rev. C. F. P., Andover,		1
Barton, William G.,		77
Belfast, Eng., Naturalists' Field Club,		2
Bemis, Miss Caroline,		3
Berlin, Gesellschaft Naturforschender Freunde,		1
Berlin, Verein zur Beförderung des Gartenbaues,		24
Berlin, Zeitschrift für die gesammten Naturwissenschaften,	1	
Bern, Naturforschende Gesellschaft,		2
Bolles, Rev. E. C., D. D.,	21	151
Bologna, Accademia delle Scienze,		1

	Vols.	Pam.
Bonn, Naturhistorischer Verein,	1	2
Boston, American Academy of Arts and Sciences,	1	1
Boston, Appalachian Mountain Club,		2
Boston, Board of Health,		16
Boston, Bostonian Society,		1
Boston, City of,	6	
Boston, City Hospital,	1	
Boston, City Hospital Medical Library,	1	
Boston, Massachusetts General Hospital Trustees,		1
Boston, Massachusetts Historical Society,	2	
Boston, Massachusetts Horticultural Society,		2
Boston, Massachusetts Institute of Technology,		3
Boston, Massachusetts Medical Society,		1
Boston, Massachusetts State Library,		1
Boston, M. O. L. L. U. S. Council of Commandery of Massachusetts,	1	
Boston, National Association of Wool Manufacturers,		5
Boston, New England Historic Genealogical Society,	2	7
Boston, New England Manufacturers' and Mechanics' Institute,	2	
Boston, Public Library,		5
Boston, Scientific Society,		3
Boston, Society of Natural History,		17
Boston, Zoölogical Society,		2
Boutwell, F. M., Groton,		1
Bovey, Henry T., Montreal,	1	2
Braunschweig, F. Vieweg und Sohn,		3
Bremen, Naturwissenschaftlicher Verein,		1
Briggs, Mrs. Edward T., Newspapers,		28
Brigham, L. F.,	1	
Brinley, Francis, Newport, R. I.,		1
Bristol, Eng., Naturalists' Society,		3
Brooklyn, N. Y., Long Island Historical Society,		1
Brooks, Mrs. Henry M. Newspapers,		2
Brown, Augustus S.,	1	
Brown, F. H., Boston,	1	
Brown, Henry A.,	1	
Brown, Samuel J., Salisbury,		1
Browne, Albert G.,	3	
Brünn, Naturforschender Verein,	1	
Brunswick, Me., Bowdoin College,		2
Bruxelles, Société Belge de Microscopie,	1	12
Bruxelles, Société Entomologique de Belgique,	1	1

	Vols.	Pam.
Bruxelles, Société Malacologique de Belgique,	2	16
Buenos Aires, Sociedad Cientifica Argentina,		6
Buffalo, N. Y., Society of Natural Sciences,		1
Buffalo, N. Y., Young Men's Association,		1
Burchard, Horatio C., Washington, D. C.,		3
Burns, Charles E.,		10
Bützow, Verein der Freunde der Naturgeschichte,		1
Caen, Académie Nationale des Sciences,	2	
Calcutta, Geological Survey of India,		7
Caldwell, Augustine, Ipswich,		2
Caldwell, Rev. S. L., Poughkeepsie, N. Y.,		1
Caller, James M.,	1	
Cambridge, Harvard University,	1	3
Cambridge, Museum of Comparative Zoölogy,		5
Cambridge, Nuttall Ornithological Club,		4
Cambridge, Peabody Museum of American Archæology and Ethnology,		1
Carpenter, Rev. C. C., Mt. Vernon, N. H.,		2
Case, Theodore S., Kansas City, Mo.,		1
Cherbourg, Société Nationale des Sciences Naturelles,	1	1
Chicago, Ill., Headquarters Military Division of the Missouri,		1
Chicago, Ill., Historical Society,	1	1
Chicago, Ill., Public Library,		1
Christiania, La Commission géodésique internationale,		4
Christiania, K. N. Frederics Universitets,	1	6
Christiania, Videnskabs Selskabet,	3	
Cincinnati, O., Mechanics' Institute,		4
Cincinnati, O., Society of Natural History,		4
Cleveland, H. W. S., Springfield, Ill.,		2
Cleveland, O., Western Reserve and Northern Ohio Historical Society,		1
Cole, Miss Caroline J.,		3
Cole, Mrs. N. D., Newspapers,		84
Columbia, Mo., State University,		1
Currier, John M., Castleton, Vt.,		2
Curwen, George R.,		1
Curwen, James B.,	34	41
Cushing, L. B., Newburyport,	10	
Cutter, A. E., Charlestown,		1
Danzig, Naturforschende Gesellschaft,	1	
Darmstadt, Verein für Erdkunde,	1	
Davenport, Ia., Academy of Natural Science,		2

	Vols.	Pam
Dennis, W. D.,		3
Dodge, James H., Boston,	1	
Donnell, E. J., New York, N. Y.,		2
Dresden, Naturwissenschaftliche Gesellschaft Isis,		3
Dublin, Royal Irish Academy,		8
Dudley, A. M.,	9	
Eads, H. L., So. Union, Ky.,	1	
Edinburgh, Royal Society,	1	
Edmands, T. F., Boston,	1	
Ellis, Henry P., Milwaukee,		1
Emden, Naturforschende Gesellschaft,		1
Emmerton, James A.,	6	54
Epping Forest and County of Essex Naturalists' Field Club,		1
Erfurt, K. Akademie gemeinnütziger Wissenschaften,		1
Erlangen, Physikalisch-medicinische Societät,		1
Falmouth, Eng., Royal Cornwall Polytechnic Society,		1
Firenze, Istituto di Studi Superiori,		12
Folsam, A. A., Boston,		3
Foote & Horton, Newspapers,	4	314
Fox, G. V., Washington, D. C.,		2
Frankfurt, a. M., Senckenbergische naturforschende Gesellschaft,	1	1
Frankfurt, a. M., Zoologische Gesellschaft,		6
Freiburg, Naturforschende Gesellschaft,		1
Gatschet, Albert S., Washington, D. C.,		2
Genève, L'Institut National Genèvois,	1	
Genève, Société de Physique et d'Histoire Naturelle,	1	
George, M. C., Washington, D. C.,		1
Gillis, James A.,	17	148
Glasgow, Natural History Society,		1
Göttingen, K. Gesellschaft der Wissenschaften,	2	
Gould, John H., Topsfield,		1
Green, Samuel A., Boston,	82	322
Hager, Albert D., Chicago, Ill.,		1
Halifax, N. S., Institute of Natural Science,		1
Halle, K. Leop.-Carolinische D. Akademie der Naturforscher,		4
Hamburg, Verein für Naturwissenschaftliche Unterhaltung,	1	2
Hamilton, R. I., Narragansett Historical Publishing Company,		4
Hammond, Joseph,		1

	Vols.	Pam.
Harlem, Société Hollandaise des Sciences,		3
Hart, Charles H., Philadelphia, Pa.,		1
Hart, Rev. Samuel, Hartford, Ct.,		1
Haskell, Mrs. A. M., West Roxbury,	1	
Hassam, John T., Boston,		1
Hazen, W. B., Washington, D. C.,		1
Hildeburn, Charles R., Philadelphia, Pa.,		1
Hill, B. D., Peabody, Newspapers,		4
Hill, H. A., Boston,	1	
Hingham, First Parish,	1	
Hoar, E. R., Concord,		1
Hobart Town, Government of Tasmania,	1	3
Hobart Town, Royal Society of Tasmania,		1
Holmes, John C., Detroit, Mich.,		1
Horton, N. A.,	1	
Huguet-Latour, L. A., Montreal,	3	24
Hunnewell, James F., Charlestown,	1	
Hunt, Miss S. E.,		12
Hunt, T. F.,	166	188
Hunt, Mrs. Thomas,	46	
Illinois Department of Agriculture,		5
Israel, Rev. F., Newspapers,	2	40
James, U. P., Cincinnati, Ohio.,		2
Jenison, O. A., Lansing, Mich.,	1	
Johnson, D. H.,	8	24
Johnson, Samuel, Estate of the late, Newspapers,	79	1744
Kimball, Mrs. James,	4	4
Kimball, Jonathan, Chelsea,		1
Kjöbenhavn, K. D. Videnskabernes Selskab,		3
Königsberg, Physikalisch-ökonomische Gesellschaft,		3
Lansing, Mich., State Library,	25	7
Latham, Williams, Bridgewater,	1	
Lausanne, Société Vaudoise des Sciences Naturelles,	3	2
Lawrence, George N., New York, N. Y.,		6
Leach, Henry C.,	1	
Lee, F. H., Newspapers,	1	343
Leeds, Philosophical and Literary Society,		1
LeMans, Société d'Agriculture, Sciences, et Arts de la Sarthe,		2
Lincoln, Francis H., Boston,		1
London, Royal Society,		7
Lord, G. R.,	31	28
Lothrop, D. & Co., Boston,	2	

	Vols.	Pam.
Lowell, Old Residents' Historical Association,		1
Lund, Carolinische Universität,	4	6
Lüneburg, Naturwissenschaftlicher Verein,		1
Lyon, Académie des Sciences, Belles-Lettres et Arts,	1	
Lyon, Société d'Agriculture,	2	
Lyon, Société Linnéenne,	1	
Mack, David, Hampton, Va.,	8	31
Mack, Miss Esther C.,	1	12
Madison, Wis., State Library,		1
Madrid, Sociedad Española de Historia Natural,		1
Malden, Middlesex Institute,		1
Manchester, Rev. L. C., Lowell,		18
Manning, Robert,		50
Manson, A. S., Boston,	1	9
Marburg, Gesellschaft zur Beförderung der gesammten Naturwissenschaften,		4
Marsh, Rev. W. H. H., New Brunswick, N. J.,	1	
Marshall, John W., Rockport,		1
Massachusetts, Commonwealth of,	2	
McDanolds, James S., Trenton, N. J.,	2	
Meek & Fielden,	1	
Meek, Henry M.,	1	
Merrill, N. F.,		1
Merrill, William, Jr., West Newbury,		29
Mexico, Museo Nacional,		3
Middletown, Conn., Museum of Wesleyan University,		1
Milburn, Mrs. W.,	2	
Montreal, Natural History Society,		1
Montreal, Société Historique,		1
Moulton, J. T., Lynn,	3	
München, K. B. Akademie der Wissenschaften,		14
Münster, Westfälischer Verein für Wissenschaften u. Kunst,		1
Nagle, J. T., New York, N. Y.,		2
Nevins, W. S., Newspapers,		4
Newark, N. J., Historical Society,	3	2
New Haven, Conn., Academy of Arts and Sciences,		2
New Haven, Conn., Yale College Library,		4
New York, Academy of Sciences,		8
New York, American Geographical Society,		7
New York, American Museum of Natural History,		5
New York, Chamber of Commerce,	1	
New York, Genealogical and Biographical Society,		3

	Vols.	Pam.
New York, Historical Society,	1	
New York, Linnæan Society,	1	
New York, Mercantile Library Association,		2
Northampton, Secretary of Smith College,		11
Northend, W. D.,	106	143
Northey, William,	6	146
Norwegian No. Atlantic Expedition, Editorial Committee,		6
Odell, Charles,	10	12
Oliver, Henry K.,	1	
Osgood, John C.,	17	12
Palfray, C. W.,	33	274
Palmer, B. P., Boston,	1	
Paris, Société d'Acclimatation,		11
Paris, Société d'Anthropologie,		5
Paris, Société des Etudes Historiques,		8
Peabody, G. L., Newspapers,	2	2
Peabody, John P.,	1	
Peabody Institute, Peabody,	1	188
Peet, Rev. S. D., Clinton, Wis.,		4
Perkins, A. C., Exeter, N. H.,		4
Perkins, George A.,		23
Perley, Jonathan,	2	
Perley, Sidney,		2
Perry, Rev. W. Stevens, Davenport, Ia.,		1
Philadelphia, Pa., American-Belgian Chamber of Commerce,		1
Philadelphia, Pa., Historical Society of Pennsylvania,		4
Philadelphia, Pa., Library Company,		2
Philadelphia, Pa., Mercantile Library,		4
Philadelphia, Pa., Numismatic and Antiquarian Society,		3
Philadelphia, Pa., Woman's Medical College,		1
Philadelphia, Pa., Zoölogical Society,		2
Pickering, Miss Mary O., Newspapers,		162
Pingree, David,	6	101
Plumer, Miss Mary N., Newspapers,		3
Pool, Wellington, Wenham,		2
Poole, W. F., Chicago, Ill.,		1
Preston, Charles P., Danvers,		1
Providence, R. I., Public Library,	1	18
Providence, R. I., Rhode Island Historical Society,		1
Putnam, Mrs. Eben,		48
Putnam, F. W., Cambridge,	1	4
Quebec, Literary and Historical Society,		2

	Vols.	Pam.
Ramsay, Alexander, London, Eng.,		4
Rantoul, R. S., Newspapers,	60	2383
Regensburg, K. b. botanische Gesellschaft,	2	
Regensburg, Zoologisch-mineralogischer Verein,		1
Rice, William, Springfield,		1
Riga, Naturforschender Verein,		1
Roads, Samuel, Jr., Marblehead,	2	
Robinson, E. P., Saugus, Newspapers,		
Robinson, John,	9	67
Ropes, Rev. W. L., Andover,		1
Sale, John, Chelsea,	7	
Salem, Peabody Academy of Science,	163	1503
San Francisco, Cal., Academy of Science,		1
San Francisco, Cal., Mercantile Library Association,		1
Savannah, Ga., Georgia Historical Society,		1
Scudder, Samuel H., Cambridge,		1
S'Gravenhage, Nederlandsch-entomologische Vereenig-ing,		4
Smith, George Plumer, Philadelphia, Pa.,	2	3
South Hadley, Mt. Holyoke Female Seminary,		1
Soule, Charles C., Boston,	2	23
Springfield, Mo., Drury College,		3
Stanwood, James R., Boston,	1	
Stettin, Entomologischer Verein,	1	
St. Gallen, St. Gallische naturwissenschaftliche Gesell-schaft,	1	
St. John, N. B., Natural History Society,		1
St. Louis, Mo., Missouri Historical Society,		4
St. Louis, Mo., Public School Library,		2
Stockholm, Entomologiska Föreningen,		5
Stockholm, R. Académie des Sciences,	13	1
Stone, Eben F., Washington, D. C.,	18	170
Stone, Robert, Newspapers,		
Stone, William, Newspapers,	72	405
Stowers, Mrs. Nathaniel,	10	2
St. Pétersbourg, Académie Impériale des Sciences,	1	3
Strahan, Thomas, Chelsea,		1
Sydney, N. S. W., Department of Mines,	1	
Sydney, N. S. W., Royal Society of New South Wales,	3	2
Taunton, Eng., Somersetshire Archæological and Natu-ral History Society,	1	
Taunton, Public Library,		1

	Vols.	Pam.
Teele, Rev. A. K., Milton,		1
Tenney, Jonathan, Albany, N. Y.,		1
Throndhjem, K. Norske Videnskabers Selskab,		1
Titus, Rev. Anson, Jr., So. Weymouth,		2
Tokio, Japan, University of,	2	1
Topeka, Kans., State Historical Society,		1
Toronto, Canadian Institute,		1
Tuckerman, J. F.,	1	
Unknown,	2	11
Upsal, Societas R. Scientiarum,	1	
U. S. Bureau of Education,		14
U. S. Bureau of Ethnology,	1	
U. S. Chief of Engineers,	10	
U. S. Chief Signal Officer,	3	5
U. S. Coast and Geodetic Survey,	1	
U. S. Commission of Fish and Fisheries,	1	17
U. S. Department of the Interior,	63	3
U. S. Department of State,	138	
U. S. Hydrographic Office, Charts,		
U. S. National Board of Health,		10
U. S. National Museum,		27
U. S. Nautical Almanac Office,	1	
U. S. Naval Observatory,	1	1
U. S. Patent Office,	3	51
Walter, Joseph R., Wilmington, Del., Newspapers,		
Waring, George E., Jr., Newport, R. I.,		2
Washington, D. C., Smithsonian Institution,	2	8
Waters, C. C., Jamestown, D. T., Map,		
Waters, H. F.,	27	298
Waters, J. Linton,	44	145
Waters, Stanley, Newspapers,	1	28
Waterville, Me., Colby University,		2
Watson, Miss C. A., Map,		1
Webb, Miss Sarah F.,	10	
Whipple, George M.,	1	4
Whipple, Mrs. George M.,	3	
Whitcher, Mary, Shaker Village, N. H.,		13
Whitney, Mrs. Mary W., Lawrence,		31
Whittier, Charles C., Boston, Genealogical Chart,		
Wien, K. k. Zoologisch-botanische Gesellschaft,	1	
Wien, Verein zur Verbreitung naturwissenschaftliche Kenntnisse,	1	

	Vols.	Pam.
Wiesbaden, Nassauischer Verein für Naturkunde,	2	
Wilkes-Barre, Pa., Wyoming Historical and Geological Society,		2
Willson, Rev. E. B.,		116
Wilmington, Delaware Historical Society,		1
Wilson, John & Son, Cambridge,	1	
Winnipeg, Historical and Scientific Society of Manitoba,		5
Winsor, Justin, Cambridge,		34
Worcester, American Antiquarian Society,		3
Worcester, Society of Antiquity,		1
Würzburg, Physikalisch-medicinische Gesellschaft,	1	1

The following have been received from editors or publishers: —

American Journal of Science.
Canadian Naturalist.
Cape Ann Bulletin.
Danvers Mirror.
Essex County Statesman.
European Mail.
Fireside Favorite.
Gardener's Monthly and Horticulturist.
Ipswich Chronicle.
La Bibliophilie.
Lawrence American.
Lynn Bee.
Magnolia Leaves.
Marblehead Messenger.
Medical Register.
Musical Herald.
Nation.
Naturalist's Leisure Hour and Monthly Bulletin.
Nature.
Newton Transcript.
Our Dumb Animals.
Peabody Press.
Quaritch's Catalogue.
Sailors' Magazine and Seamen's Friend.
Salem Gazette.
Salem Observer.
Salem Post.
Salem Register.
Turner's Public Spirit.
West Newbury Era.
Zoologischer Anzeiger.

An Art Exhibition opened on Tuesday evening, May 30, 1882. In some respects it was far superior to its predecessors, although those given in former years have proved very successful. The influence of such exhibitions can be noticed in the steady increase from year to year in the number of exhibitors and the progress developed in the interest of the general public relative to art matters. There were on exhibition from about one hundred and

twenty-five contributors, nearly four hundred specimens in the various departments of art, including pictures from the amateur's pencil up to the elaborate oil painting, decorated ware, plaques, panels, etc., in extensive and beautiful array. The arrangement was very effective, and the hall very attractive.

The following is a list of the contributors.

Geo. W. Harvey.
Frank W. Benson.
Miss Edith Rantoul.
Anson Daniels.
Mrs. W. H. A. Putnam.
Miss B. A. Putnam.
" A. B. Kilham.
" M. W. Haskell.
O. W. H. Upham.
Anna R. Thacher.
Miss M. M. Brooks.
" I. S. Jackson.
" J. S. Warden.
" A. M. Quimby.
" A. G. Pingree.
" Minnie Pond.
" K. Pond.
Mrs. N. A. Frye.
Miss A. F. Perkins.
" Ellen M. Nichols.
" M. R. Nason.
" H. M. King.
" Fanny L. Story.
Mrs. H. H. Davis.
Miss S. Ellen Pratt.
Mrs. Chas. Sewall.
" Geo. Harrington.
Arthur H. Hayward.
Geo. Newcomb.
Miss Alice M. Batchelder.
Joseph Ropes.
Miss Delia Sheldon.
" Agnes W. Endicott.
Mrs. C. L. Read.
Miss Hattie L. Kimball.
" Sarah E. Smith.
" A. L. Chadwick.
" E. W. "
Mrs. E. V. Emilio.
Miss S. S. Kimball.
" J. A. Ward.
Mrs. J. T. Mooney.
" K. T. Woods.
Mrs. J. F. Hill.
Master Henry Whipple.
H. B. H. Harrington.
Mrs. J. C. Abbott.
Miss Carrie Goldthwaite.
" L. J. Grant.
" Bessie F. Lord.
J. J. Redmond.
Miss Mary A. Batchelder.
Mrs. C. N. Symonds.
Miss L. M. Symonds.
" H. W. Brown.
" Mary K. Robinson.
Mrs. J. Robinson.
Pupils of Miss A. G. Pingree.
Miss Edith Harlow.
Master Arthur F. Harlow.
Mrs. J. H. Roberts.
Miss A. B. Holden.
" Edith B. Dalton.
" B. P. Smith.
" E. R. Pickering.
" Sarah B. Balch.

Miss E. W. Fiske.
Charles Norris.
Miss A. P. Putnam.
" F. Emerson.
" M. Swan.
Mrs. J. Battis 2d.
Miss Mary C. Torrey.
" C. L. Adams.
Mrs. George S. Osborne.
Miss E. R. Edmands.
" M. E. Phippen.
Mrs. D. Kelham, jr.
Miss Lucy B. Hood.
" C. B. Harrington.
" N. G. Peirce.
" L. C. G. Peirce.
" C. F. Chase.
" Rose Farndale.
" Eva "
Mrs. G. P. Osgood.
" H. P. Ives.
Master I. P. Symonds.
" J. G. Morse.
Miss C. L. Grant.
Mr. E. C. Larrabee.
Miss Ida Tappan.
" Julia Barker.
" Lizzie B. Gifford.
" Lizzie L. Read.
" Maggie Bolles.
Geo. A. May.
Arthur W. Dow.
Miss A. P. Pitman.
Miss Mary L. King.
" H. F. Buxton.
Mrs. N. G. Symonds.
" Martha G. Smith.
Miss Edith O. Morse.
" A. S. Tukey.
" Clara L. Pitman.
" L. L. Symonds.
Mrs. Joseph Symonds.
Albert I. Whipple.
Mrs. C. F. Quincy.
Miss L. L. A. Very.

Mr. John M. Murray, from the Lawrence pottery works in Beverly was present with his potter's wheel and gave practical illustrations of the manner that shapeless and unpromising clay can be transformed into vessels of usefulness and ornament.

Frequent and valuable additions to the art library are made by the curator of painting and sculpture, and the number of persons interested in this subject who consult this library is increasing. Many of the volumes contain valuable and useful information which the student could not obtain readily elsewhere.

Horticultural Exhibition. The annual Horticultural Exhibition was held on Wednesday and Thursday, Sept.

20 and 21, 1882, although the season was very unpropitious for a large and fine display, on account of the excessive drought, yet there was a creditable showing, and the hall had a most attractive appearance by the judicious arrangement of the various contributions.

Good specimens of vegetables were received from Plummer Farm School, Salem, Andrew Nichols of Danvers, J. Page Weston of Danvers; W. A. Ireland, E. Goss and Clarence Murphy of Salem. Contributors of fruit were as follows: Charles A. Ropes, George F. Brown, George Bowker, A. C. Locke, N. C. Locke, Charles Higbee, S. Endicott Peabody, J. C. Rogers, E. Verry, Caleb Buffum, Miss S. O. Russell, Miss E. P. Richardson, James P. Cook, Fred. Lamson, George D. Glover, G. H. Frye, jr., Mrs. Woodbury, Mrs. E. H. Valentine, E. Goss and others.

The centre of the hall was occupied by a large stand of foliage plants. Among them were some beautiful specimens of ferns in fine condition from the collection of S. Endicott Peabody at Kernwood; also fine foliage and flowering plants in pots from H. W. Putnam, William A. Ireland, H. C. Merriam and Mrs. C. Buffum.

Mrs. L. P. Weston of Danvers, W. A. Ireland, George D. Phippen, J. C. Rogers, H. C. Merriam, Miss Mary Ropes, Chas. A. Putnam, Mrs. W. F. Gardner and others, had very creditable exhibits of cut flowers. John H. Sears presented a collection of native plants.

The judges, Messrs. J. E. Peabody, R. C. Manning and Hugh Wilson, awarded the prizes as follows:— Best green-house plants, S. Endicott Peabody; coleus, Henry W. Putnam; cut flowers, Mrs. L. P. Weston of Danvers. Pears, best Beurre Bosc, George F. Brown; best Beurre d' Anjou, N. C. Locke; best Beurre Diel, C. A. Ropes; best Beurre Superfin, C. A. Ropes; best Belle Lucrative,

G. H. Frye, jr.; best Duchess d'Angoulème, N. C. Locke; best Louise Bonne de Jersey, S. E. Peabody; best Lawrence, A. C. Locke; best Seckel, F. Lamson; best Flemish Beauty, Mrs. Woodbury.

Apples, best Gravenstein, Mrs. E. H. Valentine; best Baldwin, C. A. Ropes; best Porter, Caleb Buffum.

Grapes, Best Native, George D. Glover and Mrs. J. Wilson; best Foreign, S. E. Peabody and J. C. Rogers; best Delaware, Charles Higbee.

Best collection of vegetables, Plummer Farm School.

Gratuities were awarded to H. C. Merriam and J. C. Rogers for flowers; Andrew Nichols for vegetables; William A. Ireland for tomatoes.

Museum. The specimens in natural history, including those in archæology, which have been given during the year are on deposit with the Trustees of the Peabody Academy of Science, in accordance with previous arrangements. Those of an historical character or that possess an artistic interest have been arranged in the rooms.

The following may be specified as contributors:

Shepard Devereux Gilbert, Miss Dorcas C. Nourse, Charles T. Jenkins, Rev. Joseph Banvard, of Neponset, A. A. Galloupe, Beverly, T. F. Hunt, George Nichols, Chicago, Ill., Peabody Academy of Science, Estate of the late Samuel Johnson, Miss Lydia Pope, Raymond Lee Newcomb, Rev. William H. Halley, John Robinson, A. C. Orne, Marblehead, Charles H. Allen, Ellen and Robert Hale Bancroft, Beverly, John H. Langmaid, Mrs. Francis Dodge, Danvers, William M. Hill, Benjamin O. Pierce, Beverly, William P. Upham, Mrs. Eben Putnam, B. D. Hill of Peabody, Peter Thatcher, Boston, James B. Nichols, Mrs. James Kimball, Elbridge G. Putnam, Philadelphia, Joseph W. Stone, Rev. B. F. McDaniel, O. W. H. Upham, Mrs. Lydia C. Nichols, Rev. F. Israel.

The most important of the historical donations are, Door Latch from the old Parris House; piece of the root

of an apple-tree from the grave of Roger Williams; Baluster from the Old South Church, Beverly, Baluster from the Hancock House, Boston; First Shoe ever pegged by machinery; Spoon used on board the frigate Constitution; some of Gen. George Washington's hair.

FINANCIAL.— The Treasurer's Report of the receipts and expenditures of the past year (condensed for printing).

RECEIPTS.

Balance on hand at commencement of year		$376 84
Hist. Soc. Fund.		
Dividends of stocks,		32
Nat. Hist. Soc. Fund.		
Dividends of stocks,		36
Davis Fund.		
Interest of bonds,		391 70
Ditmore Fund.		
Interest of bonds and stocks		180 40
Manuscript Fund.		
Interest of Savings Bank,	23 02	
Gift of Geo. Plumer Smith of Phila.,	50	
		73 02
Ladies Fair Fund.		
Interest of bonds,		60 00
Howes Fund.		
Interest of bonds,		1,527 50
Story Fund.		
Legacy from the estate of the late Aug. Story,		10,000 00
General Account.		
Dividends of stocks,	25 00	
Return state tax,	12 07	
Assessments of members,	905 00	
Publications,	741 31	
Lectures, Concerts, Excursions, etc.,	429 81	
Salem Athenæum, parts of bills	197 51	
		$2310 70
Sale of bonds	$2000 00	
premium,	134 50	
		2,134 50
Salem National Bank, Treasurer's note,		500 00
		$17,622 66

EXPENDITURES.

Historical.			
Binder's bill,			75 00
Natural History and Horticulture.			
Binder's bill,			75 00
Ditmore Fund.			
Annuity to F. I. Perkins,		110 00	
Amount omitted, 1879 and 1880,		20 00	
			130 00
Manuscript Fund.			
Interest and gift, added to fund,			73 02
Davis Fund.			
Interest added to fund,			11 70
Derby Fund.			
Deposits in Salem Savings Bank,			
Reported on debit in last account,			400 00
Story Fund.			
Investments; transferred from the estate,			10,000 00
General Account.			
Salaries,		2,168 61	
Publications,		1,459 13	
Books and binding,		185 75	
Salem Athenæum, Rent and Libraries,		350 00	
Fuel, Gas, Express, Postage, etc.,		453 07	
			4,616 56
Paid note of Institute and interest since 1875,			2,186 74
Balance, cash on deposit at Salem National Bank,			54 64
			$17,622 66
The invested funds of the Institute are now,			$45,766 78

In March, this year, the Institute acting in coöperation with several of the Historical Societies of this state, which were desirous to ascertain the condition of the various city and town records, sent a circular and also a carefully prepared blank form to each town and city clerk in Essex county, inviting their coöperation and requesting that the form be filled out in accordance with the instructions annexed, and returned to the Institute; also suggesting that great care be taken to make every statement precise and accurate especially as to the dates; these returns when collected and summarized, will be printed, constitu-

ting a valuable account of the records of our various municipalities.

The New England Historic-Genealogical Society, having appointed Mr. Henry F. Waters of Salem, an officer of the Institute, its agent in London for the purpose of making genealogical and historical investigations among the English records, and having called for funds in aid of this purpose, a committee, composed of Messrs. Rantoul, Emmerton and Hunt, was appointed to solicit subscriptions. The subject was brought to the notice of a few persons interested in Mr. Waters and his mission, and the sum of $525.00 was collected and sent to the committee of the above-named society, who have this duty in charge.

In closing this retrospect of the year's work of the Institute, the officers indulge in the hope, that, ere long its friends will devise some plan, by which suitable accommodations will be provided, for the proper arrangement of its library and collections.

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 15. SALEM: JULY, AUG., SEPT., 1883. NOS. 7, 8, 9.

NOTICE
OF THE DEATH OF CHARLES TIMOTHY BROOKS.

AT the regular meeting, Monday, June 19, 1883, after the routine business was transacted, the President called the attention of the meeting to the recent death of Rev. Charles Timothy Brooks of Newport, R. I., a member of the Institute, and said that it seemed proper that some notice should be taken of his decease.

REV. E. B. WILLSON said that while he was not prepared to make a formal address at this meeting, he wished to pay his tribute of respect to the memory of Mr. Brooks, and to express his admiration of the high character and delightful Christian spirit of the deceased. He had known him intimately of late years, and deemed it a great privilege to have had such a friend. In the course of his remarks, Mr. Willson said that on the occasion of the North Church Centennial celebration Mr. Brooks had been most helpful in making it a success. He also said that he had made the death of Mr. Brooks the theme of his discourse on Sunday.

REV. E. C. BOLLES said that he was glad to add his word to endorse the remarks of the last speaker, and

moved that the President and Mr. Willson be a committee to prepare appropriate resolutions on the death of Mr. Brooks, also to arrange to hold at some later day, a more formal and an appropriate memorial service under the auspices of the Institute. The motion was unanimously adopted.

Mr. Albert G. Browne and Dr. George A. Perkins remarked on the kindly and genial disposition and spirit of Mr. Brooks, and gave some personal reminiscences of his life. Dr. Perkins said that they had been life-long acquaintances and were in early years schoolmates, and the friendship had never waned. In the year 1834 he made a journey on foot to the White mountains with Mr. Brooks. This jaunt was always pleasantly remembered by both of them, and was alluded to in their frequent meetings, and it had been the expressed intention of both Mr. Brooks and himself, that, if they lived, the fiftieth anniversary of that excursion should be passed by them on the top of Mt. Washington.

Mr. Robert S. Rantoul spoke of the literary character of the deceased and dwelt especially on his remarkable facility and genius in his translation of German poetry. He said:

In the death of Charles T. Brooks we have lost another of those sons of Essex County who have made a place for themselves in American letters. I never heard Mr. Brooks preach, and my estimate of his mental qualities is made up from sources quite apart from his efforts in the pulpit. I know him, as most of us have known him, through his occasional verses, through his translations, through his sunny face and his cordial greeting. He was successful as a translator. He had that fineness of appreciation,— delicacy of touch and fibre,—faculty for giving him-

self over without reserve to his author, a sort of literary self-renunciation, self-surrender, which is to my mind the *sine quâ non*, the beginning and end of successful effort to fairly interpret and render in good faith the spirit of another's work.

He had also the drollery, the love of the grotesque, the quiet, humorous enjoyment of the extravagant vagaries of German wit, of that sly fun that so pervades home life and street life in Germany, which made it easy for him to transfer that peculiar atmosphere to his American reprint. His "Max and Maurice," for instance, is, of its kind, inimitable. No one is too old, no one is too young, to laugh over it. But he was equally fortunate in his more serious efforts in German translation. I will not enumerate these works nor characterize them. The death of Freiligrath, the great revolutionary, democratic, people's poet of modern Germany,—the Burns, the Whittier, of the Teuton race, occurred while I was at Stuttgart, where he had been residing, and when the first anniversary of it came about, I was still at Stuttgart. In Southern Germany the custom is to celebrate the day of the death rather than of the birth of those to whom the world owes something, and this first anniversary of Freiligrath's death was noticed by the English and American residents of Stuttgart with memorial exercises in which many Germans, who understood English, united with the English-speaking admirers of the poet. He had lived much in England, had purposed emigrating to America whither he had already sent forward a pioneer in the person of his son, and was well acquainted with Longfellow (whom he had translated,) and with Mr. Brooks, and was read and admired by Whittier. I was asked to make the address on the occasion, and in that connection took some pains to seek out the best English translations of some of Freiligrath's characteristic poems.

From a considerable collection of English translations made by English, Scotch and Irish writers of note as well as by Mr. Brooks, I selected as best suited to my purpose one which I will read, and, lest my local partiality might mislead me as to the quality of Mr. Brooks' work, I consulted competent critics on the spot, including the family of the German poet himself, and found that they shared my preference. I read, from the published proceedings of the occasion, Mr. Brooks's version of

THE EMIGRANT'S DEPARTURE.

Ye men, that from your necks set down
Your heavy baskets on the earth
Of bread, from German corn baked brown,
By German wives, on German hearth,

And you, with braided tresses neat,
Black Forest maidens, slim and brown,
How careful, on the sloop's green seat,
You set your pails and pitchers down!

Ah! oft have home's cool, shady tanks
Those pails and pitchers filled for you!
By far Missouri's silent banks
Shall these the scenes of home renew,—

The stone rimmed fount,— the village street,
Where oft ye stooped to chat and draw,—
The hearth,—and each familiar seat,—
The pictured tiles your childhood saw!

Soon, in the far and wooded west,
Shall log-house walls therewith be graced:
Soon many a tired and tawny guest
Shall sweet refreshment from them taste:

From them shall drink the Cherokee,
Faint with the hot and dusty chase.
No more from German vintage ye
Shall bear them home in leaf-crowned grace!

Oh say! Why seek ye other lands?
The Neckar's vale hath wine and corn:
Full of dark firs the Schwarzwald stands:
In Spessart rings the Alp-herd's horn!

Ah! In strange forests you will yearn
For the green mountains of your home,—
To Deutschland's yellow wheat-fields turn,—
In spirit o'er her vine-hills roam!

How will the form of days grown pale
In golden dreams float softly by,
Like some old legendary tale,
Before fond memory's moistened eye!

The boatman calls! Go hence in peace!
God bless you,—wife and child and sire!
Bless all your fields with rich increase,
And crown each faithful heart's desire!

Rev. Fielder Israel referred to the help Mr. Brooks had been to him in many ways and endorsed the views of the previous speakers. He read some verses of the deceased, entitled, "A winter morning on the Merrimac."

Letters were read from Rev. B. F. McDaniel and Mr. William P. Andrews, regretting their necessary absence from the meeting.

Rev. Mr. McDaniel writes:—

"I regret very much that a previous engagement, which I cannot set aside, will prevent me from attending, this evening, the meeting in memorial of Mr. Brooks, whom to know was to see the kingdom of Heaven. I should rejoice to hear the loving tributes paid by those who knew him better than I did."

Mr. Andrews writes as follows:

Dear Dr. Wheatland,

It is a matter of sincere regret to me that I cannot be personally present with you on Monday evening, to render what little tribute I may to the worth of our dear friend, Mr. Brooks; and I beg you or Mr. Willson will kindly add my word to what may be said on that occasion.

"Half Lamb, half Cowper," Mr. Silsbee has most happily called our friend, and the thought is a picture of his blended wit and simple goodness.

Simplicity, and goodness itself were personified in his gentle, unobtrusive life; and as he lately read his tribute to Mr. Story in your hall, many of us must have been struck with the applicability of his poetic praise of Mr. Story's worth to his own. His appearance, his manner and matter on that occasion, must remain forever memorable to those who were fortunate enough to hear him.

The man himself was always a delightful poem, of which his fluent, tender verse hardly gives us a full report. None the less he lived in an atmosphere of poetry which, flowing spontaneously from his mind and pen, brightened and uplifted many sorrowing hearts, and adorned many a serious or gay assemblage.

It seems to me his greatest success in literature, however, was in his most difficult undertaking, the then untried rendering of the German masterpiece into English, in its original metres. Only those who have attempted that task, or carefully compared the leading translations word by word with the German text, can appreciate the difficulty of that accomplishment, or the remarkable success with which our poet has met it. However much the loudly-blown trumpet of praise may exaggerate the merits of another version of Goethe's Faust that owes a deep and yet unacknowledged obligation to Mr. Brooks' work; the fact remains that our friend's work has never been equalled by any published translation, in fidelity to the letter, or to the feeling of the original — a fact the leading journals have lately noticed, and which was admirably stated some years since in a formal article on the subject contributed to the "New Englander."

But while it is our duty to record here the debt under

which Mr. Brooks' faithful and loving labors in this, and many another admirable translation, have placed the literatures of the two great Teuton families, we must with mournful hearts acknowledge the personal obligation we all feel in recalling his gracious life of varied usefulness and beauty.

The charm of perpetual youth that surrounded his simple, unpretentious spirit; the warm appreciation of his friends, and ready word of kindly sympathy and encouragement; the delight of his cordial manner, and mellow flavor of his mingled wit and wisdom, made his annual return, to these his native haunts, always a memorable pleasure to all of us. He was indeed a MAN, whose like we may not look upon again.

I am, my dear sir, sincerely yours,

WM. P. ANDREWS.

The PRESIDENT gave some account of the class of 1832 at Harvard, of which Mr. Brooks was a member, and mentioned the interesting as well as remarkable fact that, in the year when Mr. Brooks entered college, twenty-four applicants from Salem were examined for admission to the various colleges, of whom nineteen obtained their degree in regular course: of the twenty-four, seventeen were admitted to Harvard, and thirteen of these graduated at the expiration of four years. This is probably an unparalleled record in the educational history of the city.

The following is a list of those admitted to the different colleges in 1828.

AMHERST. *James Oliver* left during the Freshman year; afterwards entered Colby University, receiving his degree in 1838. A teacher and joint author of "Wreck of the Glide;" died in Cambridgeport, Jan., 1845.

BROWN. *Joseph Farnum*, a physician and dentist, died in Salem, Nov. 22, 1874.

Samuel Randall, died at Madison, N. J., April 20, 1862, æt. 50, Rector of Episcopal Church in that town.

DARTMOUTH. *Richard Manning Chipman.*

Edward Brown Emerson.

HARVARD. *Haley Forrester Barstow*, a lawyer, died at Grand Rapids, Mich., Aug. 13, 1871.

Charles Timothy Brooks, the subject of this notice.

George William Cleveland, merchant, died at Pontotoc, Miss., Sept. 20, 1848.

James Arthur Cleveland was admitted, but did not join the class; artist, died at Tarrytown, N. Y., May 8, 1868.

William Sewall Cleveland, left at the close of the Sophomore year.

William Fabens, lawyer, died at Marblehead, March 11, 1883.

John Forrester, left during the Freshman year, engaged in mercantile pursuits, died Feb., 1841.

William Prescott Gibbs, lawyer, died in Lexington, Mass., July 27, 1852.

Benjamin Manning Hodges, left on account of ill health, at the close of the Freshman year, died at Salem, June 30, 1830.

Charles Grafton Page, physician, electrician, Examiner U. S. Patent Office, died at Washington, D. C., May 5, 1868.

Archer Ropes, lawyer in Baltimore, Md., died Oct. 2, 1855.

John Boardman Silsbee, merchant, died in Salem April 1, 1867.

John Henry Silsbee.

William Silsbee.

Augustus Story, lawyer, Pres. Holyoke Ins. Co., Salem, died Oct. 19, 1882.

William Henry West, lawyer, died at Indianapolis, Ind., August, 1838.

Henry Wheatland.

YALE. *Horace Lorenzo Conolly;* transferred his connections to Trinity college in the senior year and received his degree from that college. Authorized to take the name of *Horace Ingersoll*, Nov. 16, 1858.

John Spencer Wallis.

Of the above list, eight are now living after the lapse of fifty-five years from the time of admission. These are the four who entered Yale and Dartmouth, and four of those who entered Harvard. Of the twenty-four admitted to college in 1828, fourteen were from the Latin School in Salem, and the others from private schools.

THE FIRST NOTICE OF THE PINE GROVE OR FOREST RIVER SHELLHEAP.

BY F. W. PUTNAM.

It now seems strange that any one could for a moment believe the great deposits of oyster, clam, quahaug and other shells along the seacoast, and of the fresh-water clam along our interior rivers, were formed by natural agencies, but fifty years ago they were almost universally considered as natural deposits; the result of upheaval of ocean beds or ancient beaches.

Dr. Ducatel, in his report on the geology of Maryland, pronounced the great heaps of oyster shells on the Chesapeake to be artificial productions, and he seems to have been the first geologist in this country to call attention to their true origin, which he did in the following words:—

"Some of the other agricultural resources of the state, besides those derived from the use of marl, have been already alluded to in the preceding sections. There is one especially, scarcely inferior in value to the marl, consisting of extensive accumulations of oyster shells, evidently made by the aboriginal inhabitants of the country; — since they are found to enclose human skeletons, deer horns, tools, coarse pottery, etc., plainly significant of their origin. The accumulations are found in many parts of the eastern shores and their principal localities are laid down in the map."— Report of J. T. Ducatel, State Geologist of Maryland, Dec. 29, 1834.

These deposits had been referred to by several of the

early writers on the habits of the Indians of the Atlantic coast as the refuse piles of the Indians, and even fifty years ago there were local traditions of their being the camping grounds of Indians, but these statements were not among the general possessions of the geologists, who were obliged to study these recent deposits in the same way that they studied the beds of fossils. Some fossil shell-beds were known, and as great stress had been laid upon the uprising of sea beaches, it became the accepted theory that all similar beds or heaps of shells were owing simply to the uprising of the coast.

In 1841 Mr. Lardner Vanuxem, a distinguished geologist on the New York Survey, made a communication before the meeting of American Geologists and Naturalists in which he gave his reasons for differing from Mr. T. A. Conrad, who seems to have persisted in the theory that the shell-beds were of natural origin,[1] and showed that the association of the shells with stone arrowheads and fragments of pottery proved their artificial origin, which was confirmed by the fact that the shell-beds were deposited upon the natural surface of the soil, and that under them were the remains of cedar trees which had formerly grown on the spot. Thus, seven years after the statement by Ducatel the question of the natural or artificial origin of the shellheaps was still under discussion.

In this connection, and with these facts before us, it is of interest to read in the unpublished records of 1840, of the Essex County Natural History Society, to which my attention was directed by the honored president of the Institute, Dr. Wheatland, the first account of the shellheap at Pine Grove, from which so many of us have ob-

[1] Vanuxem and Ducatel both agreed with Conrad in stating that some beds were of natural origin, but they were true fossils.

tained scallop shells in our younger days, when the place was famous as a picnic ground, and into which some of us have dug in after years, with a full knowledge of its Indian origin.

The record of the secretary's book of the society is headed "Report on the presence of shells in great quantities near the seashore in Salem, Mass., observed May, 1840, by John Lewis Russell."

From the record it appears that Mr. Russell addressed the society on the subject of raised beaches, and he quotes from several authors accounts of elevations of land in various parts of the world in recent times, caused by earthquakes, and also mentions several instances of raised beaches on which are great masses of shells. All these deposits, following the opinions of the authors he has quoted, he regards as natural formations. He then states that there have been found "strata of *Mya*, *Mytilus*, and *Ostrea*, several inches thick, from five to ten feet below the surface at Lechmere's Point in Cambridge," and that "S. C. Dana, M. D., the ingenious and accomplished chemist of Lowell . . . . found them on the site of the Court House [at East Cambridge] and has no doubt that they were raised to their present position from the adjacent beds of the harbor, of which the hill in question was probably at one time the shore of the then sea."[2]

After these preliminary remarks Mr. Russell comes to the special subject of the Pine Grove Shellheap, which he

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[2] The remains of an old shellheap were still visible at Lechmere's Point a few years since and probably can still be traced.

As an instance of finding shells at considerable depth along the old shore lines of Salem, I may mention that, when a boy, the old North River bank was graded at that part of Federal Street where now stand the houses built by Messrs. Haskell and Walden, and that in the old shore sand-bank, many shells of the large hen-clam, *Mactra solidissima*, were found. These were evidently shells which had been buried on the former beach of North River.

regarded as of natural origin, notwithstanding the singular association of several species of shells and bones of mammals. Had he continued to make the excavation which he mentions, to the bottom of the heap, his conclusions would probably have been entirely different. The record, however, is of interest as the first account of this now nearly effaced shellheap, and is here copied in full, as follows :—

"Having thus introduced you to these phenomena abroad, allow me to call your attention to similar in our own neighborhood and under our own eyes. Owing to the suggestion of an acquaintance I was induced to visit, in company with him, the southern shore of our harbor in that portion just east of the very picturesque group of pitch pines, contiguous to the Lead Factory of Mr. Francis Peabody. Any one who has ever rambled over the undulating hills of this spot is familiar with the indented features of the land. After passing over the crest of the hill about a fourth of a mile from where the Marblehead railroad enters the point after crossing the mouth of Forest River you descend into a valley, and at the elevation of several feet above its level, and probably more than twenty feet above high water mark, you will notice the appearance of broken shells protruding from the soil. Similar appearances exist on the shores of the Mill Pond above the Salem railroad bridge (at the foot of Circus street), but whether referable to the same agency, further examination can only determine.

"Digging into one of these spots we found an astonishing accumulation of shells in all stages of decay. Penetrating to the depth of more than four feet there seemed to be little indication that we had reached its bottom. Indeed it is not improbable from existing appearances that the bed was of indefinite extent. Specimens of

every kind of the mass were carefully saved, and are offered for the acceptance of the Society to be deposited in its cabinets.

"The greatest amount of specimens were of *Mya arenaria* or common clam. These were interspersed sparingly with *Modiola papuana*, *Mytilus edulis*, *Mactra solidissima*, *Nassa obsoleta*, *Natica heros*, *N. triseriata* and occasionally *N. duplicata*, *Fusus cinereus*, *Sanguinolaria fusca*, *Crepidula fornicata*, *Pecten concentricus*, *Ostrea* sp., upon the outside of which were minute and almost microscopic species of *Spirula*.

"You will take notice that the occurrence of the Oyster was quite rare. How this happens when its almost constant companion, *Pecten concentricus* was comparatively in abundance, I cannot explain. The oyster seems to have been an inhabitant of our northern coasts, but in sparse quantities. *Pecten concentricus* is found in company with the oyster on the southern shores as I have been informed, and indeed the exuviæ of our oyster shops are sufficient proofs of the fact, among which it is often seen. *Natica duplicata* also is peculiarly of southern habit, and belongs to a group of our maritime shells, whose living habitat is not considered as belonging to the northern shores of Cape Cod.

"But the most interesting discovery remains. This was the occurrence of fragments of bones, near the bottom of the penetration which we effected. They were in a very soft and friable condition, but became more hard and firm when exposed to the air. I have succeeded by the kind assistance of my friend, Dr. Jeffries Wyman of the Boston Natural History Society, in determining these to belong to some large species of deer, and the animal as of a young age. The existence of the fourth or fifth molar of the left lower jaw most indubitably points out

this fact, the teeth of the deer possessing a peculiar process which the teeth of no other animal have. This specimen I have retained, until I hear from a friend who is familiar with the history of our native deer. From its great size I think that it may belong to the moose, being somewhat larger than any tooth of the upper jaw of the elk or wapiti now in the cabinets of the Boston Natural History Society. That collection does not possess the lower jaw of the wapiti so that the corresponding tooth could not be compared with this. The other bones, five in number, compose some portion of the lower extremities of the right and left legs. They are :—[3]

"1. Fragment of the lower extremity of the tibia (right leg). The epiphysis is separated from the shaft of the bone, ossification not being complete.

"2. Astragalus.

"3. Os calcis. The posterior extremity broken off.

"4. A small bone situated between the lower extremity of the tibia and the upper lateral portion of the os calcis. This was an articulation with both these bones, and is supposed by Cuvier to represent the lower head of the fibula.

"5. Fragment of the left metatarsal bone. The outer condyle broken off.

"The first four bones fit accurately together and obviously belonged to the same foot.

"The want of coössification of the epiphysis of the tibia with its shaft, would indicate that the animal had not acquired its maturity. The metatarsal bone No. 5 was obviously that of a ruminant possessing originally two

[3] The paragraphs numbered 1 to 6 are given in quotations in the record and are probably a copy of Dr. Wyman's notes on the specimens which he identified for Mr. Russell.

condyles, for the articulation of two sets of phalanges of the toes. It undoubtedly belonged to the same animal with the other bones, though it formed a part of the *right* foot and the others of the left.

" 6. The 4th or 5th molar of the left lower jaw.

"It remains only to add that occasional pieces of granite of the character with the super-adjacent rocks were dug up; these were very much decomposed and in some instances had actually become sand, owing to the presence of iron, and the action of water causing oxidization. At the surface, or just below it, of similar spots the shells were so decomposed as to resemble marl, and could be easily moulded by the hand. To the agriculturist these deposits may become rich means for the improvement of his soils, requiring only the labor of transportation to places where the action of carbonate of lime would be beneficial. Such has been actually the case with a similar elevation of recent marine shells in Hingham near the alms house, and these when spread over grass land, and even on old worn-out pastures have produced astonishing effects in the production of fine and healthy grass. The Hingham bed, with which I am familiar, is, however, different from ours, being completely thrown above the soil, and presenting the aspect of a vast heap of old oyster and clam shells, designedly thrown there by the hand of man. At some future opportunity I hope to be able to procure specimens from that locality to add them to the suite from the southern shore of our harbor."

WEEDS OF ESSEX COUNTY.

BY JOHN H. SEARS.

A WEED is any plant which occupies cultivated ground to the injury of the particular crop intended to be grown. Thus, even the most useful plants may become weeds if they appear out of their proper place. The term is sometimes applied to any insignificant looking or unprofitable plants which grow profusely in a state of nature, as the fireweed, pigweed, mayweed, whiteweed, etc. There are weeds by the roadside, in gravel, brick and plank-walks, on railroad beds, in brooks, ponds and water courses.

By a system of natural selection some plants seem to thrive best in certain localities, as for instance the purslane. *Portulaca oleracea* is always found growing in cultivated grounds, while the common plantain (*Plantago major*) grows quite as abundantly in a hard, uncultivated situation. And again, the sorrel (*Rumex acetosella*) may be said to grow in either situation equally as well.

A large proportion of the plants called weeds are introduced from Europe, and as they are brought here with different kinds of crop seeds they become more or less adapted to the situation in which the seed is sown. And when the weed has perfected its seed, it will continue to thrive if the situation is a suitable one. Such plants as have become adapted to their surroundings usually grow in a like kind of soil and place, as there they thrive best, though a great many kinds of weeds have become so

thoroughly established that they grow equally well in a variety of situations. Plants also take a variety of forms from their situations and what they have to contend with in their season's growth.

The Roman wormwood (*Ambrosia artemisiæfolia*), found growing in cultivated ground, is usually two or three feet high, with a spread of two feet on the surface; while if grown in an old pasture where it is browsed on by cattle it will be found to take a form of one or two inches in height where it will thrive; and as the law of nature is for plants to mature seeds, one of these low, dwarfed plants will produce as many seeds as the larger plants grown in tilled ground. This often leads to the question asked by cultivators who, after ploughing and planting an old piece of pasture-land, find it thickly covered with the Roman wormwood, "Where do the seeds come from?" And as the full grown plant has not been detected by the casual observer for a series of years previous to the fields being planted, the query is made as to how long the seed has lain dormant in the soil.

Again, seeds of such plants as the Canada thistle (*Cirsium arvense*) and the fireweed (*Erechthites hieracifolia*) are furnished with a pappus of fine, soft hairs, which makes them very buoyant and easily transported by the wind to a great distance, and as such plants are very prolific, each plant producing thousands of seeds, when they do alight on cultivated or new burnt soil are immediately covered with the lighter material of which the soil is composed, and are ready to form a crop for the next season. Probably two-thirds of the seeds are dropped on grass lands and in woods where they never reach the soil, otherwise the country would soon be covered with these plants. I have arranged a classified list, with notes, of the weedy plants of Essex County, as follows:

Order Ranunculaceæ.

Virgin's Bower, *Clematis Virginiana*, is a climbing plant, growing on fences and in moist, mowing lands. It is a troublesome weed.

Tall Meadow Rue, *Thalictrum Cornuti*, is a coarse growing weed in fresh meadows.

Ranunculus acris, tall Crowfoot or Buttercup, is very abundant and always avoided by cattle on account of its very acrid, blistering juice. European.

Ranunculus bulbosus and *R. repens* are equally abundant, and have similar properties. European.

Order Berberidaceæ.

Berberis vulgaris, common Barberry.

This shrub was introduced from Europe, as a garden plant, for the sake of its berries. The seeds remain on the bushes all winter and supply food to the robins and other birds. They drop the seeds in fence rows and near stone walls, where they germinate and form large patches, which must be considered as weeds. They are fast covering our rocky pastures and are too abundant all over Essex County.

Order Papaveraceæ.

Celandine, *Chelidonium majus*, is quite common in old gardens and near dwellings. It was introduced from Europe.

Order Fumariaceæ.

Common Fumitory, *Fumaria officinalis*, is a weed in grain fields, and in some places a bad weed in grass lands. European.

Order Cruciferæ.

Yellow Rocket, *Barbarea vulgaris*, grows in low lands and by roadsides. It is an European plant.

Hedge Mustard, *Sisymbrium officinale*, found in waste places and near dwellings. European.

Black Mustard, *Brassica nigra*, always grows in cultivated fields. European.

Shepherd's Purse, *Capsella Bursa-pastoris*, is common in grass and tilled lands. European.

Wild Pepper-grass, *Lepidium Virginicum*, a roadside weed, native of the Southern States.

Jointed Charlock, *Raphanus Raphanistrum*, is one of the worst weeds in old farm lands, as it is very prolific in bearing seeds. European.

Order Cistaceæ.

Pinweed, *Lecheas*, of which there are three species, is a common weed in pasture lands.

Order Hypericaceæ.

St. John's-wort, *Hypericum perforatum*, abundant in old pastures and fields. European.

Order Caryophyllaceæ.

Bladder Campion, *Silene inflata*, a British species of the pink family, is spreading rapidly in many parts of Essex County. It is a deep-rooted plant. It is almost impossible to pull it up.

Common Soapwort or Bouncing Bet, *Saponaria officinalis*, escaped from gardens, is a roadside weed. European.

Corn Cockle, *Lychnis Githago*, a very pretty reddish-purple flower of the pink family, is a weed in grain fields. European.

Common Chickweed, *Stellaria media*, grows everywhere in damp grounds. European.

Mouse-ear Chickweed, *Cerastium viscosum*, a weed on lawns and in grass lands. European.

Pearlwort, *Sagina procumbens*, grows in damp places in brick walks often forcing the bricks out of place.

Sand Spurry, *Spergularia rubra*, var. *Campestris*, grows in similar situations to the last and in gravelly foot-paths.

Knawel weed, *Scleranthus annuus*, grows on railroad beds and waste places. Common. European.

Carpet weed, *Mollugo verticillata*, grows in cultivated ground, gravel walks, etc. From farther south.

Order Portulacaceæ.

Purslane, *Portulaca oleracea*. This plant is the worst weed that the agriculturist has to contend with, as it seeds very fast, and is so tenacious of life, even after it has been cut up, taking root again. Its season of growth is also during the haying time, so that it gets a good start before it is observed. It is one of the oldest European pot-herbs.

Order Malvaceæ.

Common Mallow, *Malva rotundifolia*, grows near dwellings and in garden paths. European.

Indian Mallow, *Abutilon Avicennæ*, a tall, coarse plant, escaped from gardens. From India.

Order Geraniaceæ.

Wood-Sorrel, *Oxalis stricta*, grows around dwellings and in gardens. Common.

Order Anacardiaceæ.

Poison Ivy, *Rhus Toxicodendron*, stone walls, climbing on trees, and in sandy fields.

Order Leguminosæ.

Woad Waxen, *Genista tinctoria*. This plant was introduced from Europe, prior to 1628, as a dye plant. It is fast covering the uncultivated pastures in all parts of the county. It is a native of central and southern Europe.

Zigzag Clover, *Trifolium medium*, forms dense patches in Danvers and Salem. European.

Yellow or Hop Clover, *Trifolium agrarium*, sandy fields and roadsides. European.

Black Medick, *Medicago lupulina*, abundant in grass lands. European.

Vetch, *Vicia Cracca*, a very pretty plant, but a bad weed in mowed land, as it is hard to exterminate. Abundant at Danversport.

Wild Indigo, *Baptisia tinctoria*, abundant in old pastures.

Ground Nut, *Apios tuberosa*, grows on the edges of fields, and on walls and fences, climbing on the grass.

Order Rosaceæ.

Canada Burnet, *Poterium Canadense*, a weed in fresh meadows and on river banks. Common in Danvers, Topsfield and Ipswich.

Cinque-foil, *Potentilla Norvegica*, grows in fresh meadows. It is a coarse weed.

High Blackberry, *Rubus villosus*, grows on the borders of thickets and wet meadows.

Low Blackberry, *Rubus Canadensis*, grows on rocky hills and pastures. Common.

Early Wild Rose, *Rosa blanda*, everywhere abundant in roadsides and fence rows.

Swamp Wild Rose, *Rosa Carolina*, common in wet meadows.

Order Crassulaceæ.

Garden Orpine or Aaron's-Rod, *Sedum Telephium*, one of the worst weeds in grass lands. Abundant in Danvers, Wenham and Beverly. It increases principally by tubers, though even a leaf of it will take root if covered with soil. Kerosene oil will kill it.

Order Onagraceæ.

Willow-herb, *Epilobium angustifolium*, found on new burnt land and in wet pastures, increasing rapidly by its seeds which have a tuft of long hairs at the end. The wind carries these seeds in all directions.

Common Evening Primrose, *Œnothera biennis*, a very persistent weed on roadsides, gravelly pastures and railroad beds.

Order Cucurbitaceæ.

Star Cucumber, *Sicyos angulatus*. This plant is an introduced weed from the south. It is often used to cover trellises and walls near dwellings, but is a most troublesome weed in damp soils.

Order Umbelliferæ.

Common Carrot, *Daucus Carota*, introduced into mowing lands. It seeds freely and is an unsightly weed. European.

Cow-Parsnip, *Heracleum lanatum*, is a very large, coarse plant. Found in pastures and near brooks.

Common Parsnip, *Pastinaca sativa*, common in mowed lands and increases very fast if neglected. European.

Great Angelica, *Archangelica atropurpurea*, damp fields and river banks. A coarse, strong-scented weed.

Poison Hemlock, *Conium maculatum*, a dangerous, narcotic, poisonous plant, growing by roadsides and in old gardens. This plant should be well known by all persons, as its seeds act very quickly, often producing paralysis when eaten.

Order Compositæ.

Asters and Goldenrods. These pretty plants are weeds in fence rows, on the borders of fields and in pastures. They are hard to dislodge.

Horse-weed, Butter-weed, *Erigeron Canadensis*, grows on roadsides and in fields. Very common.

Roman Wormwood, *Ambrosia artemisiæfolia*. This weed is common in all parts of the United States east of the Rocky mountains. It is a compositæ, with sterile and fertile heads, occupying different parts of the same plant.

Spiny Clotbur, *Xanthium spinosum*, waste places on the seacoast, and established as a weed in Peabody and Danvers. From tropical America.

Cone Flower, *Rudbeckia hirta*, a common weed in mowing lands. It was introduced with clover seed from the west, and is native on the prairies of Wisconsin and southward.

Tick-seed, *Coreopsis trichosperma*, and common Beggar's Tick, *Bidens frondosa*, are coarse weeds, the seeds adhering to the dress and to the fur of animals, and are thus disseminated.

May-weed, *Maruta Cotula*, roadsides and dooryards. A very common weed. European.

Yarrow, *Achillea Millefolium*, waste places and around dwellings. Common. European.

Ox-eye Daisy, *Leucanthemum vulgare*, White weed, fields and pastures. Too abundant. European. In Hanson's history of Danvers, page 47, it is said that Edward Grover planted it in his garden as an herb in 1633 at Salem Village.

Common Tansy, *Tanacetum vulgare*, escaped from old gardens. Grows in dense patches by roadsides and in fields. European.

Common Everlasting, *Gnaphalium polycephalum*, grows everywhere in pastures and old fields.

Fire-weed, *Erechthites hieracifolia*, common in recent clearings where the ground has been burnt over.

Canada Thistle, *Cirsium arvense*, a most troublesome weed in hay fields. European.

Burdock, *Lappa officinalis*, waste places and around dwellings. It is an unsightly weed. European.

Cichory, *Cichorium Intybus*, a deep-rooted weed, and one that spreads very fast. Hay fields and roadsides; too common. European.

Hawkbit, Fall Dandelion, *Leontodon autumnale*, fields and roadsides, destroying the turf on banks and lawns. European.

Common Dandelion, *Taraxacum Dens-leonis*, grows in fields and pastures.

Blue or False Lettuce, *Mulgedium*, and Sow Thistle, *Sonchus*, are coarse weeds in cultivated swamp land.

Order Lobeliaceæ.

Indian Tobacco, *Lobelia inflata*, in mowed land it is often abundant. In hay it causes horses to slaver, and is hurtful for cows to eat.

Order Plantaginaceæ.

Common Plantain, *Plantago major*, near dwellings, yards and waste places. European.

Rib-grass English Plantain, *Plantago lanceolata*, grows in dry fields and lawns, its long thin leaves escaping the mower. European.

Order Scrophulariaceæ.

Mullein, *Verbascum Thapsus*, roadsides, pastures and old fields. European.

Toad-Flax, Butter-and-Eggs, *Linaria vulgaris*, old fields and roadsides; very troublesome in grain fields. European.

Order Labiatæ.

Motherwort, *Leonurus Cardiaca*, waste places and around dwellings. European.

Order Borraginaceæ.

Viper's Bugloss, *Echium vulgare*, roadsides and waste places in Beverly, Danvers and Middleton. It is a bad weed in cultivated fields in Virginia. European.

Order Convolvulaceæ.

Bind-weed, *Convolvulus arvensis*, abundant in Salem and vicinity, growing in dense mats and seeding rapidly. It is a perennial low climber, twining upon the grass and everything within its reach.

Hedge Bind-weed, *Calystegia sepium*, is another climbing weed, and

on tillage lands is one of the worst weeds, as it twines around young plants. It is especially abundant in Danvers, Salem and Marblehead.

Dodder, *Cuscuta Epilinum*. In Europe this plant is very injurious to the Flax. It is common in many parts of this county and is parasitic on the bark of Asters, etc.

Order Solanaceæ.

Thorn Apple, *Datura Stramonium*, waste grounds. It is a dangerous, but well known weed, its seeds being a powerful emetic. From Asia.

Order Phytolaccaceæ.

Garget or Pigeon-berry, *Phytolacca decandra*, tall and stout perennials, growing on burnt land and reclaimed swamps. The stout stalks are eaten as a substitute for asparagus in early spring.

Order Chenopodiaceæ.

The Pigweeds, *Chenopodium album*, etc., are all naturalized from Europe. The beet and spinach are in the same family.

Order Amarantaceæ.

Green Amaranths or Sugar-weed, *Amarantus*. There are three species, all natives of tropical America.

Order Polygonaceæ.

Polygonum, Knot-weeds, we have thirteen species growing as weeds in the county. Those commonly known are called Smart-weed, the Arrow-leaved Tear-thumb, Goose-grass, Water pepper, Lady's Thumb with a dark spot in the leaf, and are among the best known.

Curled Dock, *Rumex crispus*, fields and roadsides. Common. European.

Yellow Dock, *Rumex obtusifolius*, fields and roadsides. Common. European.

Field or Sheep Sorrel. *Rumex acetosella*, everywhere abundant.

Order Euphorbiaceæ.

Spurge, *Euphorbia maculata*, grows in open places everywhere, especially in gravel walks.

Order Urticaceæ.

Nettles, *Urtica dioica*, waste places and roadsides. European.

Rich-weed or Clear-weed, *Pilea pumila*, grows in cool, moist shady places in old gardens.

Cannabis sativa, Hemp, waste places, roadsides, etc. Abundant at Newburyport.

Sweet Fern, *Comptonia asplenifolia*, pastures and roadsides.

Order Salicaceæ. Willow Family.

There are several shrubby species that we may consider as weeds. *Salix livida*, quite common in dry soil in pastures and fields. *Salix humilis*, Prairie Willow, and *Salix discolor*, Pussy Willow, are abundant as roadside weeds in damp places. *Salix sericea*, Silky Willow, and *Salix lucida*, Shining Willow, are common by streams and ponds, their long roots often filling them up and choking water courses.

Order Coniferæ.

Common Juniper, *Juniperus communis*, dry, sterile hills and pastures.

Order Araceæ.

Skunk Cabbage, *Symplocarpus fœtidus*, moist, springy fields and near brooks. Its coarse, fibrous roots are hard to dig up.

Order Naiadaceæ.

Pond weeds, *Potamogetons*, of which there are several species, are abundant in ponds and streams, sometimes completely filling up and changing water courses.

Order Iridaceæ.

Blue Flag, *Iris versicolor*, in wet meadows.

Order Smilaceæ.

Green-brier, *Smilax rotundifolia*, grows abundantly on the borders of woods and thickets, and on account of its tough roots and formidable scattered prickles, it is hard to eradicate.

Order Liliaceæ.

American White Hellebore, Indian Poke, *Veratrum viride*, swamps and low grounds. Common.

Onion or Field Garlic, *Allium Canadense*, is a vile weed giving its alliaceous flavor to all plants grown in its vicinity. Common. European.

Order Pontederiaceæ.

Pickerel weed, *Pontederia cordata*, common in ponds, brooks and streams.

Order Gramineæ.

Cheat or Chess, *Bromus secalinus*, one of the European grasses common in rye and oat fields. There are four species, all European.

Dog-grass, *Triticum repens*, in cultivated grounds, fields, etc. Its long, underground stems cause much trouble to gardeners.

Joint-grass, *Paspalum setaceum*, common in light soils, first showing itself in August on tillage grounds. Growing in mats it is difficult to pull out of the soil, as it breaks easily at the joints.

Panic-grass, *Panicum sanguinale*, has habits like the last, and is abundant in all cultivated and waste ground. European.

Old Witch-grass, *Panicum capillare*, common in sandy, cultivated fields.

Barnyard-grass, *Panicum Crus-galli*, is a native of the south of Europe, and one of the principal forage plants in Italy. With us it is a troublesome weed.

Foxtail-grass, *Setaria*. Three species exist here. Very common near dwellings and in cultivated fields. They are usually very weedy grasses, resembling the Millet, which is another species rarely spontaneous.

Beard-grass, *Andropogon furcatus*, and *scoparius*. These two grasses are abundant in dry, sterile grounds and roadsides.

Order Equisetaceæ.

Horsetail, *Equisetum arvense*, is common in moist, gravelly soil and on railroad beds where it is a troublesome weed. *Equisetum sylvati-*

cum grows abundantly in wet meadows, and *Equisetum hyemale* the Scouring Rush, on river banks and near brooks. They are all weeds on reclaimed meadow-land. When cut and dried with hay, cows eat them with a greedy relish.

Order Filices.

Ferns. There are several species which are considered as weeds: *Osmunda regalis*, *Osmunda Claytoniana*, *Osmunda cinnamomea*, *Pteris aquilina* and several species of *Aspidium* are all called Buckhorn, Brake, etc. They are all noxious weeds, being poisonous to young horses when mixed with hay, and they are not relished by other cattle, though goats will thrive on them better than on English hay.

Order Musci.

The Mosses are small plants not distinguishable except by the botanist. The Hair Cap Moss, *Polytrichum commune*, in dry, sterile pastures, covers many acres, forcing the grass out entirely and leaving a complete carpet of the moss. Some species of *Hypnum* will persist and make a rapid growth even in cultivated fields; others are parasitic on the bark of trees and are injurious to orchards as hiding places for insects.

Order Lichens.

Lichens are parasitic on dead wood and decayed vegetable matter. The Reindeer Moss, *Cladonia rangiferina*, completely covers some sections of our old pasture-land in Danvers and Wenham, making them entirely destitute of other vegetable growths and worthless as grazing land. Other lichens on trees in the orchard and in the woods form hiding-places for insects, where they deposit their eggs.

FIELD MEETING AT OAK DELL, GEORGETOWN.

THE first field meeting of the season was held at Oak Dell, on Tuesday, June 13, 1883. It is a picturesque spot in South Georgetown, as its name signifies, an oak grove. A beautiful pond is within easy walking distance, and the surface is pleasantly diversified. The proprietors have taken advantage of the natural attractions of the place in order to adapt it to picnics and other gatherings.

A raised platform for speakers and seats for an assembly of two hundred are placed under the oaks, and near by, a cook-house and tables for refreshments. The party from Salem and vicinity went in barges and carriages, and were joined at the grounds by others from Danvers, West Newbury, Boxford, Georgetown and Groveland. Exploring parties were at once formed, the botanical work alone promising good results. Mrs. Charlotte N. S. Horner chiefly conducted this part of the work; others visited the lake and other points of interest. At 2 o'clock P. M., the meeting was held in the grove, President Wheatland presiding, who prefaced the exercises with remarks on the utility of field meetings and the pleasant auspices under which this one was held. Mrs. Horner was introduced as one highly conversant with natural history, and who has devoted herself to the study of the flora of Essex County, especially of her own district, Georgetown and vicinity.

She exhibited and described a number of plants collected in the forenoon's ramble, indigenous to the locality. She considered this a rare field for botanical study, and stated that more species of plants can be found in it than in any other district of equal extent in the county.

A list of the more important and interesting plants of the higher orders found by her in Georgetown has been prepared by Mrs. Horner, and will be found appended to this report.

Rev. WILLIAM P. ALCOTT, of Boxford, being called upon, spoke of the lichens as worthy of study both for their beauty, botanical interest, and the part they play in the economy of the vegetable world. He also spoke of the study of mineralogy, and exhibited some specimens of rocks and minerals which he had brought from Egypt.

Rev. BENJ. F. MCDANIEL, of Salem, took up the subject left by Mr. Alcott, and gave a brief outline of the region, regretting that the rock exposures in the vicinity were so few and uniform in character as to leave little for him to say. He urged the importance of the study of geology, even in such an unpromising field, and asked for the coöperation of local students in bringing the hidden things to light.

In answers to questions, he gave a brief account of the formation of peat bogs and their transformation, through several stages, into coal.

Messrs. Sidney Perley, of Boxford, and Henry M. Nelson, of Georgetown, spoke on historical matters relating to the town, Mr. Nelson stating that Oak Dell was a part of a large tract of land, an original grant to his ancestors.

Messrs. Andrew Nichols, of Danvers, M. W. Bartlett, of West Newbury, and Dr. B. F. Stevens, of the Boxford Natural History Society, made brief remarks.

After the usual votes of thanks to Miss Nelson and the Messrs. Nelson for the use of the grounds and other courtesies received, and to Messrs. Elliot, Perley, Mrs. Horner and others who contributed to the success of the meeting, the parties separated for their journeys homeward.

NOTES ON THE FLORA OF SOUTH GEORGETOWN.

BY MRS. CHARLOTTE N. S. HORNER.

Following is a list of plants that are found on the shores and in the meadows and pastures bordering on Lake Raynor, South Georgetown, and a short distance beyond the Boxford line; but all within a half mile of the lake.

Many of the plants enumerated in this list are very common everywhere, and others are more or less frequently found in other localities; but some are found here that are rare elsewhere in the county. These are printed in italics, and their home is the small district described above. There is a small locality at the base and on the sides of some precipitous hills where are found an unusual number of rare plants. The most noteworthy of these are marked in the list with an asterisk(*). In this district are many pond weeds, grasses, sedges, mosses and lichens not found elsewhere in the town; but these are not enumerated in the list.

Clematis Virginiana.
Anemone "
" nemorosa.
Hepatica triloba.
Thalictrum anemonoides.
" dioicum.
" cornuti.
Ranunculus abortivus.
" recurvatus.
" bulbosus.
" acris.
Caltha palustris.
Coptis trifolia.
Aquilegia Canadensis.
Actæa rubra.
" *alba.*
Berberis vulgaris.
*Caulophyllum thalictroides.**
Nymphæa odorata.
Nuphar advena.
Sarracenia purpurea.
Sanguinaria Canadensis.
Cardimine hirsuta.
Viola lanceolata.
" blanda.
" cucullata.
" " var. cordata.
" pubescens.
Helianthemum Canadense.
Lechea major.
" minor.
Hypericum Canadense.
" perforatum.
" Sarothra.

Geranium maculatum.
Impatiens fulva.
Oxalis stricta.
Rhus glabra.
" copallina.
" venenata.
" Toxicodendron.
Vitis labrusca.
Ampelopsis quinquifolia.
Celastrus scandens.
Acer saccharinum.
Polygala sanguinea.
" *polygama.*
Desmodium nudiflorum.
Amphicarpæa monoica.
Lespedeza hirta.
" capitata.
Apios tuberosa.
Baptisia tinctoria.
Prunus maritima.
" serotina.
Spiræa salicifolia.
" tomentosa.
Agrimonia Eupatoria.
Potentilla Canadensis.
Fragaria Virginiana.
*Rubus odoratus.**
" strigosus.
" occidentalis.
" villosus.
" Canadensis.
Rosa lucida.
" rubiginosa.
Pyrus arbutifolia.
Saxifraga Virginiensis.
Sedum Telephium.
Hamamelis Virginiana.
Circæa Lutetiana.
Epilobium angustifolium.
" coloratum.
Œnothera biennis.
" pumila.
Hydrocotyle Americana.
Cicuta maculata.
*Aralia racemosa.**
Aralia nudicaulis.
Cornus Canadensis.
" sericea.
" paniculata.
Triosteum perfoliatum.
Sambucus Canadensis.
Viburnum Lentago.
" acerifolium.
Mitchella repens.
Houstonia cærulea.
" *purpurea*, probably introduced with grass seed.
Galium asprellum.
Cephalanthus occidentalis.
Liatris scariosa.
Eupatorium purpureum.
" perfoliatum.
" *ageratoides.**
Sericocarpus conyzoides.*
Aster corymbosus.
" patens.
" lævis.
" undulatus.
" multiflorus.
" dumosus.
" Tradescanti.
" acuminatus.
Diplopappus linarifolius.
" umbellatus.
Solidago bicolor.
" *latifolia.**
" cæsia.
" neglecta.
" nemoralis.
" Canadensis.
" lanceolata.
Inula Helenium.
Rudbeckia hirta.
Helianthus devaricatus.
Bidens frondosa.
Maruta cotula.
Achillea millefolium.
Leucanthemum vulgare.
Gnaphalium polycephalum.
" uliginosum.

Antennaria margaritacea.
" plantaginifolia.
Erechthites hieracifolia.
Senecio aureus.
" " *var. obovatus.*
Cirsium lanceolatum.
" pumilum.
Krigia Virginica.
Leontodon Autumnale.
Hieraceum scabrum.
" venosum.
Nabalus albus.
Taraxacum Dens-leonis.
Lobelia cardinalis, spike of 2 feet.
Lobelia inflata.
Gaylussacia resinosa.
Vaccinium macrocarpon.
" Pennsylvanicum.
Cassandra calyculata.
Andromeda ligustrina.
Kalmia augustifolia.
Rhodosia Canadensis.
Azalea viscosa.
Pyrola rotundifolia.
" elliptica.
" chlorantha.
" secunda.
Moneses uniflora.
Chimaphila umbellata.
" *maculata.*
Monotropa uniflora.
" Hypopitys.*
Ilex verticillata.
Trientalis Americana.
Lysimachia thyrsiflora.
" lanceolata.
" stricta.
" quadrifolia.
Utricularia cornuta.
*Epiphegus Virginiana.**
Verbascum Thapsus.
Linaria Canadensis.
" vulgaris.
Chelone glabra.
Mimulus ringens.
Gratiola aurea.
Gerardia purpurea.
" *flava.*
Castilleia coccinea.
Melampyrum Americanum.
Verbena hastata.
" urticifolia.
Phryma Leptostachya.
Mentha viridis.
" Canadensis.
Lycopus Europæus.
Pycnanthemum muticum.
" lanceolatum.
Hedeoma pulegioides.
Brunella vulgaris.
Leonuras cardiaca.
Scutellaria galericulata.
" lateriflora.
Echium vulgare. Two or three plants in a hayfield not permanent.
Myosotis verna.
Convolvulus arvensis.
Cuscuta Gronovii.
Solanum Dulcamara.
Gentiana crinita, plant 2 feet with 45 blossoms and buds.
Gentiana Andrewsii.
Menyanthus trifoliata.
Apocynum androsæmifolium.
Asclepias Cornuti.
" purpurascens.
" incarnata.
Phytolacca decandra.
Sassafras officinale.
Lindera Benzoin.
Comandra umbellata.
Euphorbia maculata.
*Ulmus fulva.**
" Americana.
Platanus occidentalis.
Juglans cinerea.

Carya alba.
" porcina.
Quercus alba.
Fagus ferruginea.
Corylus Americana.
Ostrya Virginica.
Myrica Gale.
" cerifera.
Comptonia asplenifolia.
Betula lutea.
" alba var. populifolia.
" papyracea.
Alnus serrulata.
Salix alba.
Populus tremuloides.
Pinus rigida.
" Strobus.
Abies Canadensis.
Juniperus communis.
Arisæma triphyllum.
Peltandra Virginica.
Typha latifolia.
Sparganium eurycarpum.
Alisma ptantago.
Habenaria lacera.
" psycodes.
" fimbriata.
Goodyera repens.*
" pubescens.
Spiranthes cernua.
" gracilis.
Arethusa bulbosa.
Pogonia ophioglossoides, a *white variety.*
Calopogon pulchellus.
*Corallorhiza multiflora.**
Cypripedium acaule.
Hypoxis erecta.
Iris versicolor.
Sisyrinchium Bermudiana.
Smilax rotundifolia.
" herbacea.
Trillium cernuum.*
Medeola Virginica.
Smilacina racemosa.
" bifolia.
Polygonatum biflorum.
Lilium Philadelphicum.
" Canadense.
Pontederia cordata.

Filices.

Polypodium vulgare.
Adiantum pedatum.*
Pteris aquilina.
Asplenium Trichomanes.*
" ebeneum.
" Filix-fœmina.
Phegopteris hexagonoptera.
Aspidium Thelypteris.
" Noveboracense.
" spinulosum.*
" cristatum.
" marginale.*
" acrosticoides.*
" var., incisum.*
*Cystopteris fragilis.**
*Struthiopteris Germanica.**
Onoclea sensibilis.
Woodsia obtusa.
Dicksonia punctilobula.
Osmunda regalis.
" Claytoniana.
" cinnamomea.
Botrychium Virginianum.*
" ternatum, var. australe? *fine* specimens.
Botrychium ternatum var. obliquum.
Botrychium ternatum var. dissectum.
Equisetum arvense.
Lycopodium lucidulum.
" dendroideum.*
" clavatum.
" complanatum.
Selaginella rupestris.*
" apus.

BULLETIN

OF THE

ESSEX INSTITUTE.

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FIELD DAY AT DODGE'S MILL, ROWLEY, FRIDAY, JUNE 29, 1883.

THE party from Salem went to Ipswich in the morning express train, and by carriages to the place of meeting, some five or six miles distant. At Ipswich, a passing call was made at the Manning High School, where there is a fine mineralogical collection, also specimens representing other departments of natural history. The mill is about three miles from Rowley village in the direction of Georgetown and near to the limits of Byfield. It is upon the Dummer stream or brook, and it is owned by Mr. Ignatius Dodge; in whose imnediate family it has been since 1772, and perhaps from an earlier date.

Members and friends assembled soon from Georgetown, Boxford, Ipswich, Rowley and Groveland. Tables were prepared on a sequestered little island formed by the running brook. Some of the party under the guidance of Mr. Sears went on a botanizing excursion in the neighborhood; others drove a couple of miles to a hill on which there are vestiges of supposed Indian earthworks.

This hill, known as Hobson's Hill, is owned by Joshua N. Foss. It stands out alone and commands a good view

of the surrounding country to points from three to ten miles distant. The hill lies in part within the precincts of the Byfield parish, which is bounded by the Dummer stream. The principal object in visiting the summit of the hill was to examine a long but very low embankment and ditch extending nearly in a straight line over the hill to the low land. Mr. Foss discovered this line and supposed it to be Indian work, partly, perhaps, because of evidence that the place was a resort of the Indians many years ago.

Mr. Putnam said that the work bore some resemblance to an Indian trail, but its abrupt termination was not favorable to that theory, and he thought a careful examination of the place was required before an expression of opinion would be of any importance.

After the noon repast, the company repaired to the saw mill where comfortable seats were improvised for the accommodation of those attending the afternoon session.

President WHEATLAND introduced the exercises with a few observations relating to the various circumstances under which the field meetings are held.

Mr. JOHN H. SEARS exhibited and remarked upon specimens of the following plants which had been collected during the day:

Actæa spicata, var. rubra (Red Bane Berry).
Thalictrum cornuti (Tall Meadow Rue).
Magnolia glauca (Small Magnolia).
Nuphar advena (Cow Lily).
Corydalis glauca.
Sarracenia purpurea (Pitcher Plant).
Fragaria virginiana (Strawberry).
Rosa lucida (Wild Rose).
Cornus sericea (Round-leaved Cornell).

Cornus alternifolia.
Cornus circinata.
Nyssa multiflora (Tupelo or Sugar Gum Tree).
Rudbeckia hirta (Cone Flower).
Leucanthemum vulgare (White Weed).
Specularia perfoliata (Venus' Looking Glass).
Vaccinium macrocarpon (Cranberry).
Kalmia latifolia (Large Laurel).
Kalmia angustifolia (Sheep Laurel).
Rhododendron rhodora (Rhodora).
Pyrola chlorantha (Winter Green).
Pyrola rotundifolia (Winter Green).
Chimaphila umbellata (Prince's Pine).
Linaria canadensis (Toad Flax).
Brunella vulgaris (Self-heal).
Cynoglossum officinale (Hound's Tongue).
Calystegia sepium (Hedge Bind Weed).
Apocynum androsæmifolium (Dogbane).
Ostrya virginica (Hop Horn-beam).
Peltandra virginica (Arrow Arum).
Habenaria virescens (Orchis).
Habenaria fimbriata (Great Purple Orchis).
Pogonia ophioglossoides (Pogonia).
Hypoxis erecta (Star Grass).
Sisyrinchium bermudiana (Blue-eyed Grass).
Allium canadense (Field Garlic).

Vice President F. W. PUTNAM was introduced and made some very interesting remarks on archæological subjects. These have been arranged in an illustrated paper and will be inserted at the close of this volume.

The President then introduced Mr. John Robinson with a reference to the Museum at Salem, in which collections have been going on for eighty-four years.

MR. ROBINSON spoke of the earlier collection of specimens from the South Sea Islands and the East Indies by the East India Marine Society, and those of later date,

chiefly zoölogical specimens, by the Essex Institute, all of which are now permanently deposited with the trustees of the Peabody Academy of Science and are arranged in the cabinets in the East India Marine Hall, Salem, where they are on free exhibition every day to the public.

The Academy has lately given especial attention to perfecting the collections representing the geology, botany, zoölogy and prehistoric relics of Essex County and nearly every species of the flora and fauna of this region may now be seen there, also specimens of its mineralogy and geology. The collection of prehistoric or "Indian relics" is also very large and displayed in the best manner.

This Museum is county property and the people of the county should realize their rights and privileges in this ownership. To make this museum as perfect as it is desired it should be, the coöperation of our citizens is earnestly solicited by the trustees in charge. It is their wish to do all in their power for the instruction of visitors to the collections, and they have the means and facilities to care for all accessions which are made.

Mr. Alfred Osgood, of Newburyport, made some general remarks upon the different forms of arrowpoints, and expressed some theories of his own upon the origin and use of the several forms.

Hon. N. A. Horton, of Salem, was the last speaker, and, in closing, offered the following vote which was unanimously adopted.

Voted. That the thanks of the Essex Institute are tendered to Messrs. Ignatius G. Dodge, Phineas Dodge, Harrison Nelson, W. Walker, Mrs. Hubbard, and others of the vicinity for the many kind attentions of the day, also for abundant refreshment at the noon lunch. Adjourned.

A Day at Linebrook, Thursday, July 26, 1883.

This is a rural country village situated in the western part of the township of Ipswich, and is about the same distance from the principal settlement as from Boxford and Topsfield; some of the people receive their mail matter in the latter town.

The party from Salem went in carriages; delegations from towns in the vicinity were also present. Soon after the arrival, a large number joined the botanical ramble under the guidance of Mr. John H. Sears; others went at will over the hills and valleys to see places of interest in this pleasant locality.

The noon-day repast was partaken of in a beautiful grove not far from the village church, which at 2.30 P. M. was well filled with an attentive audience; the President opened the meeting with some preliminary remarks on the general subject of field meetings, and said that the three meetings held this season were in places which the Institute had visited for the first time, an unusual experience in its history.

Mr. John H. Sears, of Salem, described the flora of the neighborhood, which, he said, is so varied, that a large portion of the plants indigenous to the county can be found here. He exhibited quite a long list of those that had been collected during the day.

Mr. M. V. B. Perley, of Linebrook Parish, read a communication which he had prepared, giving some interesting facts concerning the parish which is an old settlement, dating back to about 1636, an abstract of which is herewith appended.

Rev. B. F. McDaniel, of Salem, made an humorous reference to his attempt to reach "Pulpit Rock," which he presumed, from a specimen taken from it, was a kind of porphyry common to the neighborhood. He said there was much to be seen and investigated, in a geological point of view in the stone walls hereabouts, and gave advice in the direction of encouraging geological and mineralogical investigation. He suggested that specimens of the various rocks in the town be collected and sent to the Museum of the Peabody Academy of Science in Salem, and he promised to do his part in arranging the same.

Mr. Sidney Perley, of Boxford, was the next speaker, He made a lengthy presentation of the state of society that preceded the Revolutionary period, especially referring to the houses, domestic appliances, food, dress, education, etc.

Hon. J. J. H. Gregory, of Marblehead, made some practical suggestions about our common weeds. He said that some botanist should make a specialty of weeds common to our pastures and fields, and give the benefit of his observations to the farmers and people of the county.

Mr. A. C. Perkins, formerly of the Phillips Academy, Exeter, spoke of the importance of habits of observation among the young, and how satisfactory it is to know a plant or flower when seen. He told the story of the country storekeeper, who placed on his counter a nicely arranged bunch of the blossoms of the common potato plant, and then as the farmers, his customers, generally came to his store, he asked them if they could tell him what the flower was? Of course, all of them had seen the potato blossom year after year, but no one recognized it and wondered what the beautiful specimens were.

Mr. Perkins said that such meetings were of great

value to the people, and he invited the persons present to examine their closets and garrets, and send printed or written historical or genealogical matter to the Institute for preservation, mentioning instances of papers, thus found, that were of great value and importance to the student in history.

Hon. N. A. HORTON, of Salem, said a few words respecting the parish of Linebrook and its connection with the witchcraft troubles in 1692.

The SECRETARY offered a vote of thanks to the people of Linebrook for their kind attentions, and also for the use of the church for the purposes of the meeting. After an unanimous adoption, the meeting adjourned.

The people of Linebrook seemed to have taken a great interest in this meeting; men, women and children turned out *en masse* during the day, while at the afternoon meeting there was a large attendance. It was the generally expressed opinion that the gathering was one of more than ordinary interest and enjoyment.

A PEN-RAMBLE IN LINEBROOK.

BY M. V. B. PERLEY.

THIS is ancient territory. There were vested rights, upon the southeast, as early as 1635 or 6. Before 1653 Ipswich-Linebrook was all improved. The earliest owners were Batchelder, Winthrop, Norton, Foster, Payne, Jacobs, etc. The earliest settlers were Batchelder, Foster, Sherwin, Howe, Perley, Fowler, Davis, Grant, Burnham, Cooper, Burpee, Tenney, Pingree, Kimball, Chapman, Dodge, Jewett, Dresser, etc.

The earliest settlements were upon the south and north where the rivers led. It has always been a farming community. The surface is agreeably diversified with hills, plains and meadows. Hunsley hill upon the northeast, 300 feet above the level of the sea, is the highest elevation in the county, except Baldpate in Georgetown, 392 feet, and Holts hill in Andover, 423 feet. Upon Hunsley's summit, a tree, which was used by the United States government as a beacon for many years, was destroyed by the wind some ten years ago. The plain land is somewhat sandy and not now particularly adapted to farming. When the soil was new it was very satisfactory for raising the cereals, and our early ancestors sought and valued it for corn, wheat, flax and others. The valleys are rich and fertile. The meadows were highly prized by the settlers, for they were the principal source of feed for their cattle in winter. One hundred and twenty-five years ago Mr. Job Pingry owned three thousand acres of this territory.

Within our southwestern border is Hood Lake, fifty acres of beautiful water, lately stocked with choice fishes.

Near the site of the ancient church is "pulpit rock," having a perpendicular frontage of some ten feet, overlooking a broad plain, where Rev. George Whitefield electrified the multitude with the spirit of his power, as he reasoned of righteousness, temperance, and a judgment to come. Near the present church is one of the largest barns in the county, 120 by 41 feet, with excellent equipments. Opposite this barn is the site of the old garrison and tavern, where at a militia election the successful candidate was accidentally shot by his opponent, who was tried and convicted, but pardoned by the Governor before sentence was pronounced; and where upon an election day a Mr. J. P. climbed the flag-staff, unaided, to the top of the mainstaff, for the reward of a bowl of punch that had been placed there by means of ladders. Having reached the top and secured the prize, he offered to share it with any who might earn it as he had. Several attempts with as many failures made him

> Monarch of all he surveyed
> With rights that none could dispute.

Early in the present century there was the very eccentric sign of a very eccentric man. It has found its way into literature, and has been told as an entertaining story by travellers far and wide. His title was corporal, his trade blacksmith, his business landlord, and his sign:

> "I shoe the horse, I shoe the ox;
> I carry the nails in my box;
> I make the nail, I set the shoe,
> And entertain some strangers too."

At times he would not reply when questioned unless addressed by his title. He was as obliging and generous as he was eccentric.

During the Revolution, report said one day that the enemy was sailing up Batchelder's brook, and men, wo-

men and children fled for their lives. But one Dresser, whom they met, called them fools and deliberately taking out his pipe and lighting it, said, "I'll take a little smoke before they get here." They did not come, but we are not to infer that he is smoking now.

One of our most substantial, practical, influential and valuable citizens, in general business and town affairs, was Phineas Nelson Dodge, for many years selectman and assessor, and several times elected special supervisor and commissioner in valuations and expenditures of large sums of money.

Rev. Samuel Perley was born here — a graduate of Harvard College, an able preacher, and a member of the convention that ratified the Federal Constitution, and voted for its adoption. Here, too, was born Rev. Nathaniel Howe, uncle of our present pastor, a graduate of Harvard College, a preacher of Hopkinton, and noted for his originality, incisive diction and hard logic. Linebrook fought in the Indian wars, in the Revolution, in the war of 1812, and furnished some fifteen or twenty soldiers against the Rebellion.

But what of the parish as such? Of what use is it when churches and ministers are not particularly necessary to lead the great majority in the contemplation of truth; when saving truth is uttered only by the most popular preachers; when converts can be made on a Sunday pleasure-ride, as in a prayer-room; when seasides and groves are as hallowed, as the place where prayer is wont to be made? Of what use when men, *therefore*, are under no especial obligation to support it, except as a matter of charity to the church; and tire so much during the week in the service of the world, that they feel too tired to serve God on Sunday? There is little use of it, and there is a corresponding ignorance of its function. But there

was a time when the parish had its use; when every man understood and obeyed its precept or felt its rod of correction; when the parish was a power for good in social life and moral conduct, to say nothing now of the exemplary piety fostered by that old regime. There was a time when a man should labor six days and rest on the seventh; when he must belong to some parish, must contribute proportionally of his substance for the gospel support, must be in his place of worship, with his family, on Sunday, or give a good and substantial reason for his neglect, and so bring up his children in rectitude. The parish was not a regime of compulsion more than any rule of right conduct of to-day. Worship is naturally inherent and is the foundation of religious life, and no well-ordered life exists without a time and place for everything. So every community for religious worship and instruction must have its metes and bounds, its corps of officers, its laws and by-laws and means of support.

Parishes grew up then as towns do now. New corporations in either case remove existing burdens and open new facilities for progress and prosperity. The inhabitants of this precinct were burdened in being so far remote from their respective places of worship. Boxford first parish, and Rowley second, were upon the west, Byfield upon the north, Rowley and Ipswich first parishes upon the east, and Topsfield parish upon the south. Central Linebrook is some four miles from either. Besides, many living within that distance would be better accommodated here; and with ample territory and consequently ample means, it was thought advisable to employ a religious teacher as early as 1739 or 40. Shortly afterwards the propriety of a corporate parish began to be discussed, and a petition was sent to the Great and General Court of Massachusetts Bay. Finally, a committee of that body

"repaired to the several parishes, took a view of the situation and circumstances and heard the parishes concerned," and submitted their report March 21, 1745, old style. "In Council June 4, 1746, it was ordered that the inhabitants and their effects by the report set off together with such other persons exempted as may join them within twelve months, be and are hereby erected into a distinct and separate precinct accordingly, and that they do duty and receive privileges as other precincts within the Province do or by law ought to enjoy, and that the charge of the committee amounting to 9£. 9s. 6p. be paid by the petitioners."

"Sent down for concurrence.

"J. Willard, Sec'y.

"Received and concurred in.

"J. Hutchinson, Speaker.

"Consented to.

"W. Shirley.

"Copy examined,

Pr Josiah Willard, Sec'y."

The warrant for the first meeting was issued by "the worshipful Jonathan Wade, one of his Majesty's Justices of the Peace for the county of Essex." It was directed to Abraham How, and he was requested "to notify and warn the freeholders and other inhabitants of the precinct qualified to vote in town affairs to assemble and meet at the meeting-house in said parish, on Monday, the 7th day of July next, at one of the clock afternoon." It was dated and signed: "Given under my hand and seal this twelfth day of June in the twentieth year of his Majesty's reign annoq: Domini 1746. Jonathan Wade Justc Pacis."

Mr. How made return of the warrant, and the first parish meeting was held according to its precept. George

Hibbert was chosen moderator; Mark How, clerk; and John Smith, Daniel Foster, George Hibbert, Jonathan Burpee and John Fowler, jr., a committee for calling future meetings. Thus the parish obtained its status, its right to command its parishioners and to tax their property.

The perimeter of the parish is in part composed of five different brooks, and it was, therefore, determined by vote Jan. 27, 1746–7, to name it Linebrook. Dec. 25, 1755, Dea. Jonathan Burpee, Sen. David Perley and Mark How were chosen a committee to join with the neighboring parishes in perambulating the line, which was described in the petition to the Great and General Court, and recorded in the parish records March 17, 1752, as follows:

In Ipswich, beginning at the mouth of Howlett's brook, so called, by the north side of Ipswich river; thence running northeasterly by said river till it comes to Gravelly brook, so called; thence running northerly by said brook across the West Meadows till it comes to John Smith's, to the west branch of Egypt river, so called, and by said river till it comes to the northeasterly corner of Bullbrook pasture so called; thence northwesterly including said pasture till it comes to where said pasture strikes Rowley line; thence westerly on Rowley line till it comes to Batchelder's brook, so called; thence northerly by said brook, including George Kilburn's and Thomas Wood's land on the east side of said brook, following the said brook till it comes to the easterly part of George Hibbert's land; then, as said Hibbert's land runs to the northwest corner thereof, including said Hibbert's land; thence running northwesterly as the line runs between Jonathan Burpee's and Aquilla Jewett's land to the brook, on which stands Mr. Tenney's grist-mill; so by the brook

to the said mill; thence by said brook till it comes to Straight bridge; still southwesterly on said brook including Aaron and Job Pingree's and Jedediah and David Kilburn's and David Perley's land on the north of said brook to an island in the Great Meadows, called Peabody's Island, to Boxford line; thence southerly as Boxford and Rowley line runs till it comes to the Ipswich line; thence as the line runs between Boxford and Ipswich, till it comes to the corner bounds between Ipswich, Boxford and Topsfield before Capt. Perley's door; thence as the line runs between Topsfield and Ipswich, till it comes to the first mentioned bounds at Howlett's brook.

Feb. 11, 1774, a part of the parish with the same part of the town of Ipswich was by the General Court set off to Topsfield. June 28, 1786, a law was passed wherein the bounds of parishes formerly settled were "confirmed and established." After the amendment to the State Constitution a law was made whereby all memberships of parishes must be preceded by an application in writing. In 1846, a part of Ipswich was set off to Boxford, but no mention was made of the parish, which was, therefore, uneffected. No other changes have come to our notice and the Linebrook of to-day includes parts of Rowley, Ipswich and Boxford — the original line except in the set-off to Topsfield. A parishioner, at first, as determined by Worshipful Wade's warrant for the first meeting, was an inhabitant of the precinct, qualified by law to vote in town affairs. By the law of June 28, 1786, a parishioner must pay, over and above his poll-tax, a tax equal to two-thirds of a single poll-tax. We know of no other restriction and no change in these. The Public Statutes of 1882 say: "Nothing in this chapter shall enlarge or diminish the powers of taxation enjoyed by

any religious society by virtue of any special law or act of incorporation, nor impair the existing right of property of any territorial parish." Thus Linebrook exists to-day, if these laws have been complied with,— exists at the age of one hundred and thirty-seven years, strong in her original powers and privileges, and only subject to the duties and liabilities of her youth.

The first meeting-house was erected in 1743. June 27, 1746–7, the parish voted to finish the house thus: First, the pulpit and deacon's seat; second, the body seats below; third, three fore seats in each gallery; fourth, the gallery stairs and plaster under the gallery; fifth, a pew for the parish. May 18, 1747, it was voted that the meeting-house be finished by the last of October. It was a two-story, square house, was furnished with box-pews, and was entered by a front door and a door on each side. Dec. 28, 1747, a committee was chosen to receive and receipt for a gift from Abraham Smith, and discharge the executor. They were also to paint the pulpit suitably and put on it the name of *Abraham Smith deceased*. This house stood about a third of the way on the road from the Ipswich-Linebrook school-house to the Rowley-Georgetown road. The building committee were John Smith, Thomas Potter, Mark How, Jonathan Burpee and John Abbott. The genealogy of the Fowler family reads that James Davis, who married Abigail Metcalfe, gave the land on which the house stood. The parish records read that the price of pew No. 11, bought by Joseph Metcalfe and Jonathan Burpee, was "3½ acres of land to build the house on." The house was removed to the location of the present church and rebuilt in 1828 and dedicated Jan. 1, 1829. The rebuilding followed the old model. The present church was erected in 1848.

Their method of psalm singing was quaint. The tuner,

as the leader was called, would read a verse or line and then strike some symmetrical movement, when all the organs vocal followed. In 1791, the singing-school was invited to assist the tuners, and their office began to decline.

No Ruling Elder was chosen after 1787. The deacons number twelve. Dea. William F. Conant, the present incumbent, has worthily and efficiently performed the duties of his office for fifty-two years. He has also been superintendent of the Sunday School, at intervals, about forty years. The school was established about 1818. No records of its progress or doings have been kept or are now. It is doing a good work, and has a membership of about fifty.

The church has had five settled pastors. Rev. George Leslie was the first. He was a native of Scotland, a graduate of Harvard College, a divinity student of Rev. John Emerson of Topsfield, was ordained here when the church was organized, married Deacon Burpee's youngest daughter, had eight children (six sons), removed to Washington, N. H., where he was installed in 1780, where he was offered and declined a professorship in Dartmouth College, and where his family sleep, save one son. He was an eminent scholar, intellectually powerful, and a pious and successful minister. Rev. Gilbert T. Williams succeeded. He was a native of New Jersey, a graduate of Dartmouth College, lived in the house Mr. Leslie owned and occupied, and was dismissed after a useful ministry of twenty-four years. He settled the next year in West Newbury, where a shock of palsy terminated his labors. He died at Framingham in 1824. Rev. Ezekiel Dow was the next pastor. He was born in Warren, N. H., where he now resides. He was installed Christmas, 1860, and he closed his pastorate in 1866. Mr. Dow's successor, 1866–1871, was Rev. Alvah M. Richardson, a

native of Woburn, a graduate of Amherst and Andover, a good, worthy and pious man, but an unsuccessful preacher. Rev. Benjamin Howe, our present pastor, succeeded him. Mr. Howe is a native of Linebrook; he fitted for college at Meriden, N. H., Academy, graduated at Amherst College, and at Hartford, Conn., Seminary. He is a worthy citizen, is generous and charitable, a good and diligent student, a faithful and fairly successful preacher, a pious man. The infirmities of age have unfitted him for parochial duties, except on occasions, and he has retired to his farm in Hudson, N. H. *Serus in cœlum redeas.*

There have been stated supplies by the Rev. Messrs. David Tullar, Moses Welch, J. W. Shepard, Eliphalet Burchard, E. E. Abbott and J. W. Healy, now Doctor of Divinity and President of Sierra Madre College, Passadena, California, and others, whose labors have been blessed with fruitful harvests.

The internal life of the church has been an average harmony. Her worldly goods and favors have been scanty, yet in moral worth and religious fervor she has kept abreast of her sisters. The Master of the Vineyard has evidently been lovingly watchful of his own, as attested by his Spirit. The membership now is forty-nine, about forty of whom are residents.

Through all these years the church has been a power for good; and no well-minded, thoughtful parishioner, who loves his own, who cherishes his neighbor, who seeks good society, who would purify social life, who would help to elevate the moral standard, would throw wholesome influences about his children, and so make his own name redolent with praise,— will stand complacently by and see the old society need any good thing.

A Day in Groveland, Wednesday, August 15, 1883.

The meeting this day was held by invitation of the Groveland Flower Mission, and was one of much enjoyment.

It was attended by a good delegation from Salem, and in the afternoon by many representative citizens of the immediate neighborhood. At the station, on the arrival of the morning train, was a committee who kindly guided the visitors to the places of interest.

Some passed the forenoon exploring the fields along Johnson's Creek, above the Boston and Maine Railroad Station and Palmer's Creek, which finds its way to the river, a short distance below Balch's Grove, in quest of plants, a good collection of which was made for the afternoon session.

Among those who visited the "Great Rock" was Mr. Alfred Osgood of Newburyport, who says it is a boulder of apparently fifteen tons, resting upon three smaller stones; it is of diorite, the prevailing rock of this vicinity, which consists of feldspar and hornblende. Those who did not join the excursionists went to Balch's Grove, the place for the meeting, which is a very attractive spot, bordering on the Merrimac River. It is extensive in area, and is made up of some open level land and a hill which extends, we should judge, almost or quite half a mile in the direction of the Groveland bridge. The eastern termination of this hill rises from the river's pathway as a steep bluff, and from the cleared space at the summit a very fine river-view may be obtained, which includes the hills and wooded banks opposite, the river below until it winds out of sight and the flourishing city

of Haverhill above. Steamers and tug boats were from time to time seen going up and down the river, and an occasional sail or row boat contributed to the attractiveness of this beautiful, historic and very important industrial stream.

The lunch was served on the grounds, and our hosts showed great hospitality in their courteous and kind attentions.

The afternoon session was held in the pavilion at 2.30 P. M. The President made a few preliminary remarks, in which he spoke of previous visits of the Institute to Groveland, the first being in 1837, when they were received in the Academy Hall, Rev. Dr. Perry and preceptor Morse being much interested in the work of the Institute. Another visit was in 1872, the meeting being in the new Academy Hall.

Miss HARRIET E. PAINE, the President of the Groveland Flower Mission, was then introduced, who gave a very interesting account of the botanical rambles, showing a variety of plants gathered, some of which are not found in the surrounding towns, and others which are rare, comprising in all some seventy-six species. She subsequently read a list of some of the plants to be found in Groveland which are not mentioned by Mr. Robinson in his "Flora of Essex County."

In the course of her remarks she alluded to the fact of occasionally finding plants not previously noticed; the seeds, from which they germinated, were probably brought down in the waste from the mills above. A partial list of the plants above alluded to is hereto appended.

Hon. GEORGE B. LORING, U. S. Commissioner of Agriculture, was introduced to speak upon the subject of

"Forestry," which had just been engaging his attention at the west. Before proceeding to that subject, however, he spoke a pleasant word for the fidelity of Mr. W. P. Conant, an associate member of the Institute who is doing faithful work in the Agricultural Department at Washington in the collection and classification of the grasses. He spoke of the Merrimac River and its associations with matters of history, and of the vast importance of its many and varied industries at Manchester, Lowell, Lawrence and other places, contrasting them with the woollen industry by hand process of the olden time.

After briefly alluding to the leather and other industries, he then spoke of the lumbering business and its growth within the past fifty or sixty years; formerly it was considered as being identified exclusively with Bangor. The activity of the woodman in destroying our forests is raising the question of the future supply. If it continues at the rate it has been going on in Maine, the supply will be exhausted in eight or ten years. In Michigan, Wisconsin, and other western states, it will be but a few years before similar results will follow. But in Texas, rating from the past it would take 250 years to exhaust the supply, and in South Carolina 150 years. While lumbering is disappearing along the northern belt, there is a belt of lumber standing along the Gulf States. The south now wants the activity and energy of New England, and this will be one of the stepping-stones by which this section will become prosperous and enterprising. While these remarks had more particular reference to pine, he spoke also of ornamental woods. At St. Paul's he had been presented with a gavel made of hickory, which was very handsome. Of all the many and various woods in the collection at Washington there were none

that would compare with the beauty of some of the southern pines or that of the ornamental woods in which the country abounds. Dr. Loring spoke of the importance of impressing upon the public mind the necessity of preserving our woods. This can be done by taking the same care of the cut woodlots that is taken of the cornfield. The woodland should be protected the same as any other land. Pine wood will make a growth in twenty years; oaks and hard woods, as a rule, in about forty-two years. Wherever a man goes trees follow him. Trees will grow anywhere and will grow plentifully. It is only necessary that the ground should be cultivated. Many trees are not to be transplanted, but planted; those that are indigenous to the soil do best. He said this might seem to be a small question by the side of the great crops of the country, but it was one of great importance.

Hon. N. A. Horton, of Salem, presented a few brief sketches from the history of Groveland. He spoke of the Old Parish Church, organized June 7, 1727. The first occupant of its pulpit was the Rev. William Balch; he died Jan'y 12, 1792. His successor was the Rev. Ebenezer Dutch ordained colleague-pastor Nov. 17, 1779, who died Aug. 4, 1813, at the age of sixty-two. He was followed by Rev. Gardner Braman Perry,[1] who died Dec. 16, 1859, having been in the active service of the ministry over thirty-six years.

Rev. Mr. Perry is represented as a man of more than ordinary ability as a preacher, and stood high in his denomination. He appeared to have that faculty of discreetness which was capable of giving a strong moral sup-

[1] Rev. Gardner Braman Perry, D. D., son of Nathan and Phebe (Braman) Perry, born at Norton, Mass., Aug. 9, 1783; gr. Union College, 1804; ordained Sept. 28, 1814. See Bulletin Essex Inst., Vol. IV, 106.

port to the reforms of the times without the misfortune of antagonizing any party. He was a promoter of temperance reformation and a sympathizer with the anti-slavery cause. He was a man of much public spirit and was interested in the promotion of works to benefit the town and the public.

Mr. Horton then spoke of the late Dr. Jeremiah Spofford,[2] who died in this place a few years ago, at an advanced age. He alluded to him as a man whose opinions were always strong and decided, and a fair type of that old-fashioned citizenship which constituted the best life of New England, and to the influence of which this state and country must look for prosperity and permanence in the future. He then proceeded to read, with here and there a passing comment, a dozen short extracts from an address delivered by Dr. Spofford in the First Church, Groveland, June 22, 1867. It was published at that time in a pamphlet entitled "Reminiscences of Seventy Years, including Half a Century in the Practice of Medicine in this Place." It was a mixture of autobiography and town history.

After some remarks from Dr. Loring and Dr. George Cogswell, of Bradford, in reference to Rev. Dr. Perry and Dr. Jeremiah Spofford, and the passing of a vote of thanks to the Flower Mission of Groveland, and to Mr. Balch, the proprietor of the grove, for courtesies extended during this pleasant visit to Groveland, the meeting adjourned.

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[2] Jeremiah Spofford, son of Jeremiah and Temparence Spofford, born at New Rowley (Georgetown), Dec. 8, 1787, removed to East Bradford (Groveland), in 1817, died Sept. 16, 1880. See Bulletin Essex Inst., Vol. IV, 108.

PLANTS SHOWN AT THE MEETING IN GROVELAND, MASS., AUGUST, 1883

BY MISS HARRIET E. PAINE.

Ranunculus Flammula, var. reptans (Creeping Spearwort).
Actea rubra } fruit (Red Baneberry).
" alba } fruit (White Baneberry).
Hypericum ellipticum (St. John'swort).
" corymbosum (Common St. John'swort).
" mutilum.
Ceanothus Americanus (fruit); a plant from which tea was made during the Revolution). (New Jersey Tea).
Desmodium Canadense.
Lythrum Salicaria (Spiked Loosestrife).
Cicuta bulbifera (Cowbane).
Sium lineare (Water Parsnip).
Liatris scariosa (Blazing Star).
Solidago latifolia.
" lanceolata.
Krigia Virginica (Dwarf Dandelion).
Hieracium Canadense.
" venosum (Rattlesnake Weed).
Lobelia Cardinalis (Cardinal Flower).
Campanula rotundifolia (Harebell).
Lysimachia ciliata.
Mimulus ringens (Monkey Flower).
Gratiola aurea.
Scutellaria lateriflora (Mad-dog Skullcap).
Cuscuta Gronovii (Dodder).
Laportea Canadensis (Wood-nettle).
Carya alba (fruit) (Shagbark Hickory).
Peltandra Virginica (fruit) (Arrow Arum).
Goodyera repens.
Dulichium spathaceum.
Zizania aquatica (Indian Rice).
Spartina cynosuroides (Salt Marsh Grass).
Bromus ciliatus.
Andropogon furcatus.
" scoparius.
Equisetum hyemale (Scouring Rush).
Struthiopteris Germanica (Ostrich Fern).
Cystopteris fragilis, var. dentata.
Buxbaumia aphylla.

GROVELAND PLANTS NOT REPORTED BY MR. ROBINSON IN COUNTY FLORA.

BY MISS HARRIET E. PAINE.

Lythrum alatum, a few blossoms near a creek flowing from a woollen factory.

Penstemon Digitalis, found in several places, one of them an old field where it could not have been introduced with western grain.

Trillium album and Trillium declinatum, in a rich meadow where all the intermediate steps between T. cernuum and T. erectum may be found, some of the plants also varying in the direction of T. sessile and T. erythrocarpum. In the same meadow has been found one plant of a Salix which has not yet been identified by any of the four or five botanists who have seen it. It was not more than one or two feet in height, and further search in the meadow has failed to discover any trace of more.

Allium Schœnoprasum.

Buxbaumia aphylla.

Fegatella conica.

The above were mentioned at the Institute, with the exception of the Willow. Since then, the following have been added to the list, as well as many *varieties* of plants, particularly of lichens.

Sanicula Canadensis.

Houstonia purpurea, a var.

Solidago gigantea.

Bidens cernua.

Penstemon pubescens.

Rumex glomeratus.

Pertusaria multipuncta.

Field Day at West Peabody, Wednesday, Sept. 19, 1883.

By invitation of the West Peabody Farmers' Club, a meeting was held this day at the Schoolhouse Hall in West Peabody. The members of the Institute and their friends began to assemble at 10 A. M., and were cordially received by a committee of the Farmers' Club, consisting of the President, Mr. Taylor, and Messrs. Upham, Henderson, Viles and Farwell. The company was divided into excursion parties, and under the direction of members of the Club visited several places of interest in the fields and woods. The farms of Messrs. Henry Saltonstall, Francis H. Appleton, William P. Upham and Joseph Henderson were visited, and every facility was extended to examine these well laid-out grounds, extensive barns filled with hay and other crops, fine breeds of stock, and the various new and improved implements used in the general management of the farm.

These are in striking contrast with the system adopted and the means employed in carrying on large farms some fifty years ago. Similar improvements are perceptible in all the other industries of this county. The agricultural keeps pace with the mechanical, the commercial and manufacturing.

A botanical ramble was organized under the direction of Mr. John H. Sears, and many places of interest were visited.

At one o'clock the various parties reassembled for lunch, and at an hour and a half later the afternoon session was held.

The President in the chair. After a few introductory remarks, he called upon Mr. John H. Sears who gave, in a very pleasant manner, the results of the botanical ramble

showing a variety of plants which were collected. Many of the species were those that are usually found at this season in similar localities in this vicinity: others were rarities of considerable interest. He spoke of the *Gentiana crinita* (Fringed Gentian), *Veronica americana* (Brook Lime), *Parnassia caroliniana* (Grass of Parnassus) and of some of the species of Solidago and Asters. In a small pond near the residence of W. P. Upham, Esq., he collected specimens of *Polygonum amphibium*.

Mr. GEORGE DIXON, an English gentleman now residing in Virginia, spoke of the English grasses and of the English sparrow. He is of the opinion that we shall find this sparrow to prove troublesome ere long.

Mr. WILLIAM P. UPHAM read a paper giving an account of the early settlements in West Peabody, the bounds and landmarks of many of the farms and estates and the traditions relating thereto that have come down in the old families. This paper was referred to the publication committee, and will appear in the Historical Collections.

Messrs. James F. Ingraham, Willard Spalding, James P. King, Joseph Henderson, all of West Peabody, Woodbury P. Conant, of the U. S. Agricultural Department, and J. S. Kingsley made appropriate and interesting remarks.

The Secretary offered the following vote which was unanimously adopted.

Voted, That the thanks of the Essex Institute are due and are hereby tendered to Messrs. Harrison Taylor, W. P. Upham, Bowman Viles, James P. King, John E. Hedrick, Joseph Henderson, Edwin C. Farwell and other members of the West Peabody Farmers' Club, for the many kind attentions tendered during the day; also to the town authorities for the use of the schoolhouse for the purposes of the meeting. Adjourned.

REMARKS
UPON SOME CHIPPED STONE IMPLEMENTS.

BY F. W. PUTNAM.

(*Communicated at the meeting on June* 29, 1883.)

Vice-President PUTNAM addressed the meeting on the subject of "American Archæology." After a general statement of the importance of studying the works of man in the past, not only in order to obtain an insight into the condition and development of the early races, but also, by comparison, to trace their connections and migrations over the world, he confined his remarks to the method of manufacture, the character and use of chipped stone implements. The subject was illustrated by several photographs and drawings which he brought from the Museum at Cambridge, and by the local collection exhibited to the meeting by Mr. Dodge.

The first cutting implements used by man, to supplement his finger nails and teeth, probably consisted of pieces of stone, broken shells, the teeth of animals and splinters of bone or wood, according to the particular circumstances and surroundings of the individual. While such natural and primitive implements are still in use by the lower savages, and in emergencies are resorted to by us all, the natural wisdom of man, as shown by his great inventive power in his onward march, soon led him to prepare implements better adapted to his purposes. Thus, among the very oldest works of man, of which we have positive knowledge, are the chipped stone imple-

ments found at greater or less depth in the gravel beds of various parts of the world; such as those discovered by Dr. Abbott in the gravel of the Delaware valley at Trenton, N. J., of which figs. 1 and 2 are representations.

Implements such as these were made readily from any kind of stone which fractures with a sharp edge, and they were formed by striking off pieces with another stone which served as a hammer. In each locality the stones which have this essential character soon became known and hence we find that chipped implements made of the several varieties of slate, jasper and quartz are abundant in this vicinity, while in other parts of America flint or chert, obsidian, chalcedony and other kinds of stones were used.

A variety of argillite was the material in common use among the people inhabiting the valley of the Delaware at a time so remote that we are unable, as yet, to express it in years. While we cannot affirm that the rudely-made implements found in the Trenton gravel were fastened to handles, it is probable that they were, as we know that similar implements are furnished with handles by savages probably as low in the scale of humanity as were the ancient men of the glacial epoch. Figures 1 and 2 represent two of the argillite implements from the Trenton gravel.

Fig. 3 is an illustration of a rude stone implement provided with a handle, from Tasmania. The handle is simply a tough twig which has been cut or scraped flat on one side and then bent over the stone; the flat surfaces of the twig coming together below the stone are secured in place by a string and form a rounded handle. A similar method may have been followed in hafting the rude implements found in the gravel.

Another primitive form of cutting implement is shown

in fig. 4. This is from Australia, and was made by fastening sharp fragments or flakes of stone to a stick by means of a tenacious gum. It is a good illustration of the manner in which flint and other flakes may have been mounted for use as saw-like knives by North American tribes. The original of this figure is in the collection of the Peabody Academy of Science, Salem.

Another rude but efficient form of knife is shown in fig. 5. This is simply a large flake of striped gray flint, slightly chipped along two of its edges. It was taken from an Indian grave in southern California, and is described with several others of a similar character in Vol. VII, Report of Lt. Wheeler's survey west of 100th meridian. Fragments of the wooden handle and some of the asphaltum with which it was fastened, are still attached to the base of the stone. Such flint knives without their handles are common, and are often called rude arrowheads or spearpoints, although by most archæologists they are termed flake-knives or trimmed flakes. A flint knife with its wooden handle is shown in fig. 6. This also was from an Indian grave near Santa Barbara, California. Numerous other specimens of this character have been found in graves in southern California. It is seldom the case that the wooden handle is preserved, although the asphaltum with which the blade was fastened to the handle often remains attached to the stone.

In other regions different substances were used for securing the blade to the handle. Among many interesting objects taken from bundles containing human skeletons,[1] found by Dr. Edward Palmer in the burial caves of Coahuila, Mexico, and now in the Peabody Museum

[1] See Reports Peabody Museum Arch. and Ethn., Cambridge. Vol. III, p. 233.

at Cambridge, are large, thin and well-chipped points of flint which are fastened to short handles, by means of a tenacious substance probably obtained from the cactus. Representations of seven of these knives from two burial caves are given in figures 7-13, as they form a very interesting addition to our knowledge of at least one of the methods of mounting the large chipped points, and they also show that not all such points were spearheads.

Although large rude implements, like those from the Trenton gravel, were made by simply chipping off pieces so as to leave a rough cutting edge or a point, the delicately flaked knives from the Mexican caves required additional work of a higher character.

The art of making arrowheads and similar objects out of stone is often stated to be one of the lost arts; but this is not the case, since at the present time there are many Indians in this country, who continue to manufacture them, and even work pieces of glass bottles into symmetrical and delicate arrowpoints. The method of making the points has been described several times by eye-witnesses, and although there is a difference in detail according with the material used and the skill of the workman, the manufacture may be described in general terms as follows:

A piece of that particular kind of stone, which experience has shown to be the best attainable for the purpose, is selected and roughly shaped by striking blows with a hammer-stone. If it is found to chip readily, it is shaped still further by light blows along the edges, each blow striking off a chip. Partly wrapped in a piece of skin, it is then held in the left hand and finished by flaking off little bits. This delicate part of the work is done with a flaking tool made usually of a piece of bone or antler. This

is a few inches long and about half an inch wide, having one end rubbed down to a blunt edge, which may be either straight, pointed or notched. The other end is fastened to a piece of wood so as to give a firm support to the hand. Sometimes this wooden handle is long enough to be held under the arm, thus steadying the implement which is grasped by the right hand. The edge of the flaker is pressed firmly against the edge of the stone, then with a slight rotation of the wrist a small flake is thrown from the edge of the stone. It will be found that, with a little practice, this flaking can be done with considerable rapidity and precision. Some stones flake better after being heated. The numerous forms of chipped implements known as scrapers, drills, knives, spearpoints and arrowheads, which are represented in the collection before us, probably were made by a method similar to this which I describe. Presumably the smaller are arrowheads which were mounted in various ways.

A mounted point, which may have been either a heavy arrow or a javelin, is shown in fig. 14. It was found in an ancient grave near Arica, Peru, by Mr. J. H. Blake. The point is of quartz and is held in the socket by the string which passes over the barb and is wound round the end of the wooden shaft. The other end of the wood is so shaped as to lead to the conclusion that it was set into a shaft like the more slender piece which forms part of the arrow shown in fig. 15. Both specimens were found by Mr. Blake in the same grave. The more delicate quartz point of the latter is set in a hole in the end of a piece of hard wood and held fast by gum or pitch. The thread was wound round the wood simply to keep the piece from splitting. This piece was then set in a hollow reed which formed the long shaft of the arrow. This

method of mounting arrowpoints is common in North America. Figs. 16, 17 and 18 represent arrows made by the Navajo and Pah-Ute Indians. In these the points, which are of chalcedony and obsidian, are fastened in a notch at the end of the wood with pitch and a lashing of sinew. The piece of wood is then set in a hollow reed, as shown in fig. 16*a*; the end of the reed being wound with sinew to prevent its splitting. Another mode of mounting is shown in fig. 19. It is an arrow made by the natives of Tierra del Fuego. The point is chipped from a piece of bottle glass, and is fastened directly in a slot at the end of the wooden shaft by binding firmly with a sinew without the aid of any pitch or gum.

FIG. 1.

FIG. 1. IMPLEMENT OF ARGILLITE FROM THE TRENTON GRAVEL. $\frac{1}{1}$

FIG. 2.

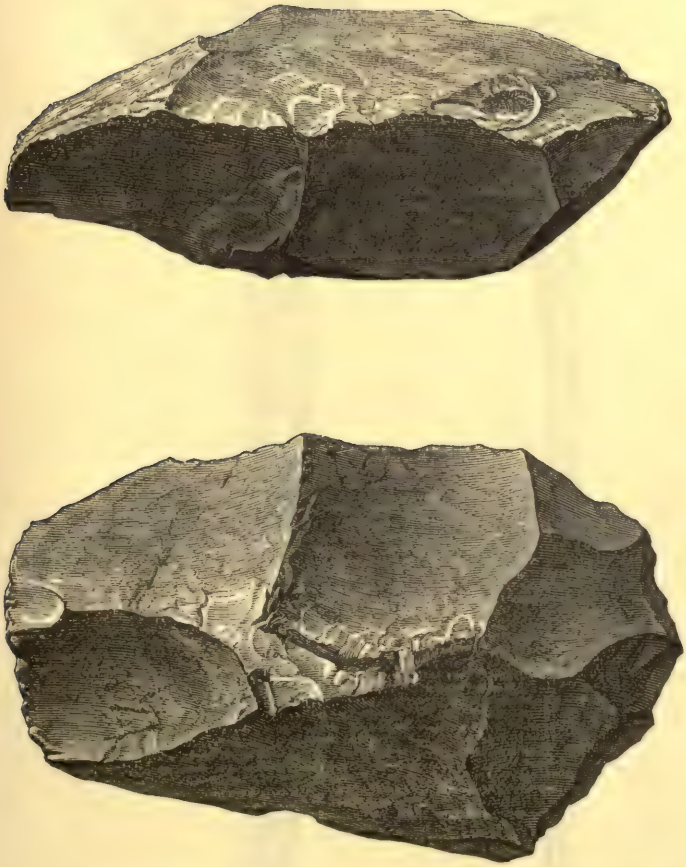

FIG. 2. TWO VIEWS OF AN IMPLEMENT OF ARGILLITE FROM THE TRENTON GRAVEL. $\frac{1}{1}$

FIG. 3.

FIG. 4.

FIG. 3. RUDE STONE AXE IN A WOODEN HANDLE. ½ FROM TASMANIA.
FIG. 4. STONE CHIPS FASTENED BY GUM TO A WOODEN HANDLE. ½ FROM AUSTRALIA.

FIG. 6.

FIG. 5.

FIG. 5. FLAKE KNIFE WITH REMAINS OF WOODEN HANDLE. $\frac{1}{1}$

FIG. 6. RUDELY CHIPPED STONE KNIFE IN WOODEN HANDLE. $\frac{1}{1}$

FROM GRAVES NEAR SANTA BARBARA, CALIFORNIA.

Fig. 7.

Fig. 8.

Figs. 7, 8. Flint Knives in wooden handles. ½
From Burial Cave in Coahuila, Mexico.

FIG. 9.

FIG. 10.

FIGS. 9, 10. FLINT KNIVES IN WOODEN HANDLES. ½
FROM BURIAL CAVE IN COAHUILA, MEXICO.

FIG. 11.

FIG. 12.

FIGS. 11, 12. FLINT KNIVES IN WOODEN HANDLES. ½
FROM BURIAL CAVES IN COAHUILA, MEXICO.

FIG. 14.

FIG. 13.

FIG. 15.

FIG. 13. FLINT KNIFE IN WOODEN HANDLE. $\frac{1}{2}$ FROM CAVE IN COAHUILA, MEX.
FIG. 14. QUARTZ POINT IN WOODEN SOCKET. $\frac{1}{1}$ FROM GRAVE IN ARICA, PERU.
FIG. 15. ARROW POINT WITH SHAFT OF WOOD AND REED. $\frac{1}{4}$ FROM GRAVE IN ARICA, PERU.

FIG. 16*a*.

FIG. 16.

FIG. 17.

FIG. 18.

FIG. 19.

FIGS. 16–18. NAVAJO AND PAH-UTE ARROWS. $\frac{1}{4}$ 16*a*, SHOWS JOINING OF THE WOODEN PORTION OF SHAFT WITH THE REED.
FIG. 19. ARROW FROM TIERRA DEL FUEGO. $\frac{1}{4}$

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BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 16. SALEM: JAN., FEB., MARCH, 1884. NOS. 1, 2, 3.

PREFATORY NOTE.

AT a meeting of the Essex Institute, held on Monday, December 17, 1883, it was announced that the Friday evening preceding (Dec. 14) was the fiftieth anniversary of the assembling together of a few friends, among whom may be mentioned Dr. Andrew Nichols of Danvers, William Oakes of Ipswich, John C. Lee, Thomas Spencer, J. M. Ives, B. H. Ives, Charles G. Page and others, of Salem, to take the initiatory steps in the organization of a society for the promotion of Natural History, under the name of the Essex County Natural History Society. At this meeting a committee was appointed to draft a constitution and by-laws, and these were adopted at an adjourned meeting held on the Wednesday following.

The completion of the organization was effected at a meeting held in Topsfield on Wednesday, April 16, 1834. This last event it is proposed to commemorate in April next at Topsfield.

This Society united with the Essex Historical Society, organized in 1821, was incorporated by the Legislature of 1848 under the name of the ESSEX INSTITUTE.

THE FOLLOWING PUBLICATIONS may be specified among those issued by the Institute since its organization in 1848.

Proceedings and *Communications* 6 vols., 8vo, 1848 to 1868. These volumes contain a large number of descriptions and figures of new species, especially of corals, insects and polyzoa, and many valuable papers in natural history. The first three volumes also contain many important historical papers. In addition to the papers on special subjects, these volumes contain the proceedings of the meetings of the Institute, the records of additions to the Library and Museum, and many important verbal communications made at the meetings.

Bulletin, 15 vols., 8vo, issued quarterly, a continuation of the "Proceedings of the Essex Institute" containing an account of the Regular Home and Field Meetings of the Society and papers of scientific value.

Historical Collections 20 vols., 8vo, issued quarterly, contain extracts from the records of courts, parishes, churches and towns in this county; abstracts of wills, deeds and journals; records of births, baptisms, marriages and deaths, and inscriptions on tombstones; also papers of historical, genealogical and biographical interest. In these volumes will be found memoirs of deceased members of the Institute and others; also genealogies of Essex County families.

Flora of Essex Co., by John Robinson, 8vo, pp. 200.

First Cruise of Frigate "Essex," by Admiral Geo. H. Preble, U. S. N.

In the year 1883 the Institute exchanged publications with thirty-two societies in Germany, ten in France, four in Switzerland, three in Austria, one in Denmark, four in Sweden, two in Italy, two in Belgium, thirteen in Great Britain (besides receiving the Government Surveys of India and the United Kingdom), and with eighteen Miscellaneous, twenty-three Scientific and twenty-three Historical Societies in America.

THE NORTH AMERICAN REPTILES AND BATRACHIANS.

A LIST OF THE SPECIES OCCURRING NORTH OF THE ISTHMUS OF TEHUANTEPEC, WITH REFERENCES.

BY SAMUEL GARMAN.

THE following list is presented in the shape in which it has proved most useful in my own work. As in other publications, I have placed the date immediately after the authority, as one naturally thinks it. In order accurately to determine species, comparison should be made with the original description rather than with the opinion of a subsequent writer; for this reason reference is made to the discoverer and not to one in whose opinion the species belongs to a genus some other than that in which it was originally placed. Consequently, the references are under names unaffected by frequent changes from one genus to another.

Heretofore, the faunal limit for North America has been patriotically placed at the Mexican boundary. The distribution of the reptiles and Batrachians proves this limit to be unscientific, and shows the nearest approach to a separation between the faunæ of the Americas, North and South, at the southern extremity of the tableland of Mexico. Attempt is made in this list to include all the species known to occur north of that point.

When several localities for a species are given, they are chosen to indicate the extent of its range as nearly as possible.

With a slight modification, the binomial system is followed. For various reasons, as will be seen below, the tri-

or polynomials affected by different authors, can hardly be considered improvements. Such names as, for example, *Cinosternum* (*Thyrosternum*) *pennsylvanicum pennsylvanicum* (v) x, or *Tropidonotus* (*Nerodia*) *compressicaudus compressicaudus flavirostris* (v) y, if there were varieties, have the appearance of doubtful advances from a binomial system. According to that system, if V first describes a species under a certain title, and W discovers one closely allied —giving it a name— and X says W's species is not sufficiently distinct, X is entitled to the credit rather than W, and the formula reads *Genus* (*Subgenus*) *species subspecies* (V) X. That is, V is credited with a form he never saw, and W is discredited by X who claims to rank with V because, for whatever reason, possibly insufficient knowledge, he arrives at a conclusion differing from that of W. If there are varieties, Y may displace X, and for authorities we should have (V) Y, or, if Z discovers that Y's variety is out of place, (V) Z, and in either case the authorities cited may give us no information concerning the form to which the names refer.

If we are now to adopt a polynomial system, we might, to be more consistent, accept the names given before Linné's time.

The modification suggested in the binomials consists in using a symbol, a letter, to represent each form or race of a species with its history or synonymy. To illustrate, *Eutænia sirtalis* Linn.; B. & G., is the first (A) of a group of forms of the species *sirtalis*, Linné being authority for the species, and Baird and Girard for its position in the genus. The A can always be understood and need not be written with the first described form. If either the symbol or the name following it is in italics there can be no confusion.

B *Eutæniæ sirtalis* is the form to which Catesby gave the name *Vipera gracilis maculatus*, afterward named by

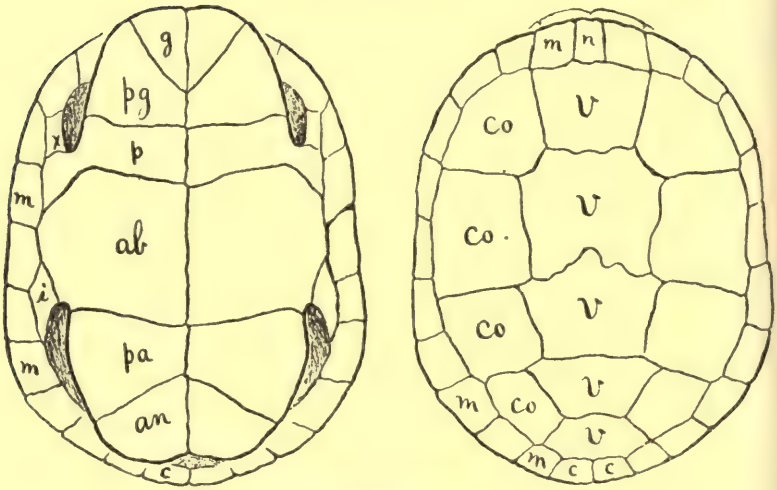
Linné *Coluber ordinatus*. The authorities for the races succeeding the first may or may not be written. To write them, D *E. sirtalis* Say; Jan, is that described by Say as *Coluber parietalis*, but placed as a variety of *sirtalis* by Jan. In the synonymy, the history of each of the various forms is indicated under their respective letters. The use of the letter leaves little or no excuse for duplication, confusion, and excessive length in the name, or for a questionable disregard of the earlier authorities. It may be objected that the original name tells more about the form than would a symbol. If we grant this in cases in which the name fixes some obvious characteristic of the species, there remain all those in which such names as *Smithi*, *Doubledayi*, *Wosnessenskyi*, and similar ones have been employed, many others in which the history of the form begins under a vernacular, or, if a variety noted by Gray, Günther, Bibron, Boulenger and other writers, under a letter, and a multitude of cases of names emphasizing some peculiarity — individual, sexual, or belonging to certain seasons or ages, which not being permanent or general are inaccurate or misleading.

It is suggested that the names are easier to learn or remember than the letters. Why the name Smithi should be easier than D or H does not appear; neither does it appear that a large number of letters, as in the long names, is easier to learn or remember than a single one.

Letters are in use among English and French writers to indicate varieties, the custom dating back half a century or more.

The method suggested has been applied in a few of the following genera. There are numerous others in which the present list of species, as in *Sceloporus*, *Geotriton*, and others, is susceptible of a considerable reduction, which will be a necessary consequence of further study.

TESTUDINATA.



CHRYSEMYS PICTA.

g. Gular.
pg. Postgular.
p. Pectoral.
ab. Abdominal.
pa. Preanal.
an. Anal.
x. Axillary.
i. Inguinal.
n. Nuchal.
m–m. Eleven Marginals.
co. Four Costals.
c. Caudal.
v–v. Five Vertebrals.

SPHARGIDIDAE.

DERMATOCHELYS Blainv., 1816, Bull. Soc. Philom., p. 111.

Testudo coriacea (Rond.) Linn., 1766, Syst., Ed. 12, 350.
Tropical Atlantic and adjacent waters.

D. schlegeli
Tropical Pacific and Indian oceans.

CHELONIOIDAE.

THALASSOCHELYS Fitz., 1836, Ann. Mus. Wien, I, 121.

Testudo cephalo Schneid., 1783, Schildkr., 303 (*caouana* auct.).
Tropical Atlantic and adjacent waters.

Chelonia olivacea Eschsch., 1829, Zool. Atlas, p. 3, pl. 3.
Tropical Pacific and Indian oceans.

COLPOCHELYS Garman, 1880, Bull. Mus. Comp. Zool., 124.
C. kempi Grmn., l. c. 123.
Northeastern part of the Gulf of Mexico.

ERETMOCHELYS Fitz., 1843, Syst. Rept., 30.
Testudo imbricata Linn., 1766, Syst., 350.
Tropical Atlantic and adjacent waters.
Caretta squamata Krefft, 1871, Austral. Vertebr., 39.
Tropical Pacific and Indian oceans.

CHELONIA Brongn., 1805, Essai d'une Class. Rept.
Testudo mydas Linn., 1758, Syst., 197.
Tropical Atlantic and adjacent waters.
(B) **Chelonia marmorata** D. & B., 1835, Erp., II, 546.
Atlantic around Ascension Island.
Chelonia agassizii Bocourt, 1870, Miss. Sci. Mex., Rept., p. 26, pl. 6.
Tropical part of the eastern Pacific.

TRIONYCHIDAE.

AMYDA Fitz., 1843, Syn. Rept., 30.
Trionyx muticus Les., 1827, Mem. Mus., XV, 263.

PLATYPELTIS Fitz., 1836, Ann. Wien Mus.
Testudo ferox Penn., 1767, Phil. Trans., LVI.
Mississippi valley and eastward.

ASPIDONECTES Wagl., 1830, Amph., 134.
Trionyx spiniferus Les., 1827, Mem. Mus., XV, 258.
Mississippi river, tributaries and eastward.
A. asper Ag., 1857, Contr., I, 405.
Valley of the lower Mississippi.
A. nuchalis Ag., l. c., 406.
Tennessee river and eastward.
A. emoryi Ag., l. c., 407.
Texas to Mexico.

CHELYDROIDAE.

CHELYDRA Schweigg., 1814 (read 1809), Prodr. Monogr. Chelon., 23.

Testudo serpentina Linn., 1754, Mus. Ad. Fridr., 36,—1758 Syst., 199.
From Canada southward, east of the Rocky mountains.

MACROCLEMYS Gray, 1855, Cat. Sh. Rept., 48.
Chelydra lacertina Schw., 1814, Chelon., 23.
Florida to Texas.

CINOSTERNOIDAE.

AROMOCHELYS Gray, 1855, Cat. Sh. Rept., 46.
Testudo odorata Latr., 1801, Rept., I, 122.
Maine to Texas.

GONIOCHELYS Ag., 1857, Contr., I, 423.
Aromochelys carinata Gray, 1855, Cat. Sh. Rept., 47.
Florida to Texas.
G. minor Ag., 1857, l. c., 424.
Alabama to Louisiana.

THYROSTERNUM Ag., 1857, Contr., I, 427.
Testudo pennsylvanica Gmel., 1788, Syst. Linn., I, 1042.
Virginia to Florida.
Cinosternum sonoriense LeC., 1854, Pr. Phil. Ac., 184.
Arizona; Sonora.
C. integrum LeC., l. c., 183.
Mexico.
C. henrici LeC., l. c., 182.
Arizona.
C. doubledayi Gray, 1844, Cat. Tort., 33.
California.
C. cruentatum Dum., 1851, Cat. Met., 16.
Mexico; Texas.
K. punctatum Gray, 1855, Cat. Sh. Rept., 45 (s. d.).
Eastern Florida.
K. shavianum Bell., 1825, Zool. Jour., II, 304.

PLATYTHYRA Ag., 1857, Contr., I, 429.
P. flavescens Ag., l. c., 430.
California; Texas; Utah.

EMYDOIDAE.

PSEUDEMYS Gray, 1855, Cat. Sh. Rept., 33.
Testudo rugosa Shaw, 1802, Zool., III, 28.
New Jersey; North Carolina.
T. concinna LeC., 1820, Ann. N. Y. Lyc., 106.
North Carolina; Missouri; Louisiana.
Emys mobiliensis Holbr., 1842, Herp., I, 71.
Florida to Mexico.
E. hieroglyphica Holbr., l. c., 111.
Gulf States to Tennessee.
E. ornata Gray, 1831, Syn. Rept., 30.
Mexico.
Callichelys? pulcherrima? Gray, 1863, Ann. Mag., 181.
Mexico.

TRACHEMYS Ag., 1857, Contr., I, 434.
Testudo scabra Linn., 1758, Syst., I, 193.
North Carolina to Georgia.
Emys troostii Holbr., 1842, Herp., I, 123.
Illinois and southward.
E. elegans Wied., 1839, Reise N. Amer., I, 176, 213.
Dakota to Texas.

GRAPTEMYS Ag., 1857, Contr., I, 436.
Testudo geographica Les., Jour. Phil. Ac., I, 85, pl. 5.
New York to Texas.
Emys lesueurii Gray, 1831, Syn. Rept., 12.

MALACOCLEMMYS Gray, 1844, Cat. Tort., 28.
Testudo palustris Gmel., 1788, Syst. Linn., I, 1041.
New York to Texas.

CHRYSEMYS Gray, 1844, Cat. Tort., 27.
Testudo picta (Herrm.) Schneid., 1783, Schildkr., 348.
Nova Scotia to Louisiana.
C. marginata Ag., 1857, Contr., I, 439.
Michigan to Iowa.
C. dorsalis Ag., l. c., 441.
Mississippi to Louisiana.
Emys belli Gray, 1831, Syn., 12.
Illinois to Missouri.
E. oregonensis Harl., 1837, Am. Jour. Sc., 382, pl. 31.
Oregon.

DEIROCHELYS Ag., 1857, Contr., I, 441.
Testudo reticulata (Bosc.) Daud., 1805, Rept., II, 144.
North Carolina to Louisiana.

EMYS Brongn., 1803, Mem. des Sav. Étrang.
Testudo melagris Shaw & Nodder, 1793, Nat. Misc., pl. 144.
New England to Wisconsin.

NANEMYS Ag., 1857, Contr., I, 442.
Testudo guttata Schn., 17—, Berl. Gesellsch. Nat. Fr., IV, pl. 4.
New England to North Carolina.

CALEMYS Ag., 1857, Contr., I, 443.
Testudo muhlenbergii Schoepff, 1792, Test., 132.
Pennsylvania to New Jersey.

GLYPTEMYS Ag., 1857, Contr., I, 443.
Testudo insculpta LeC., 1828–1836, Ann. Lyc. N. Y., III, 112.
Nova Scotia to Kentucky.
Emys incisa Boc., 1870, Miss. Sci. Mex., Rept., 11, pls. 1 and 2.
Mexico.

ACTINEMYS Ag., 1857, l. c., 444.
Emys marmorata B. & G., 1852, Pr. Phil. Ac., 177.
California to Puget sound.

CISTUDO Flem., 1822, Philos. Zool., 270.
Testudo carinata Linn., 1758, Syst., I, 198.
New England; South Carolina; Michigan.
C. triunguis Ag., 1857, Contr., I, 445.
Georgia; Louisiana.
C. ornata Ag., l. c., 445.
Kansas; Dakota.
C. major Ag., l. c., 445.
Alabama; Florida.
Onychotria mexicana Gray, 1849, P. Z. S. Lond., 17.
Mexico.

TESTUDINIDAE.

XEROBATES Ag., 1857, Contr., I, 446.
Testudo carolina Linn., 1758, Syst., 198.
South Carolina; Texas.
X. berlandieri Ag., l. c., 447.
Texas; Mexico.
X. agassizi Cooper, 1863, Pr. Cal. Acad., II, 120.
California; Sonora.

RHIZODONTA.

CROCODILIDAE.

CROCODILUS Gronow, 1756, Mus. Ichth., II, 74,—1763, Zooph., 1, 10.

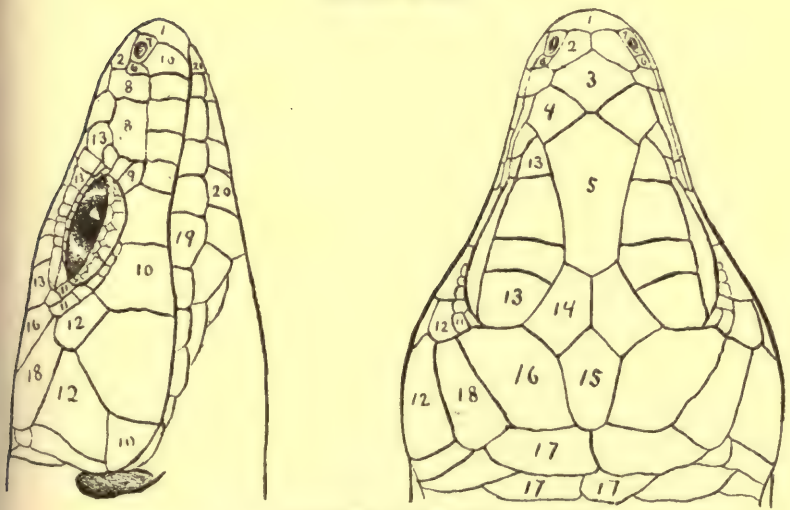
C. acutus Cuv., 1807, Ann. Mus., X, 55.
South America; West Indies; Florida.

C. pacificus Boc., 1870, Miss. Sci. Mex., Rept., 31.
Mexico; Ecuador.

ALLIGATOR Cuv., 1807, Ann. Mus., X.

Crocodilus mississippiensis, Daud., 1805, Rept., II, 412.
North Carolina to Mexico.

SAURIA.



EUMECES FASCIATUS.

1 Rostral.
2 Supranasals.
3 Internasal.
4 Prefrontals.
5 Frontal.
6 Postnasals.
7 Nasals.
8 Loreals.
9 Preorbitals.
10 Labials.
11 Postorbitals.
12 Temporals.
13 Supraciliaries.
14 Frontoparietals.
15 Interparietal.
16 Parietals.
17 Occipitals.
18 Supratemporals.
19 Infralabials.
20 Submentals.

EUBLEPHARIDAE.

COLEONYX Gray, 1845, Ann. Mag., XVI, 162.
Stenodactylus variegatus Bd., 1858, Pr. Phil. Ac., 254.
Texas; California.

GECCONIDAE.

SPHAERODACTYLUS Wagl., 1830, Amphib., 143.
S. notatus Bd., 1858, Pr. Phil. Ac., 254.
Key West, Fla.

PHYLLODACTYLUS Gray, 1829, Spicil. Zool., 3.
P. tuberculosus Wiegm., 1835, Act. Acad. Caes. Leop., XVII, 241, pl. 18, f. 2.
Mexico.
P. xanti Cope, 1863, Pr. Phil. Ac., 102.
Cape St. Lucas.

DIPLODACTYLUS Gray, 1832, Pr. Zool. Soc., 40.
D. unctus Cope, 1863, Pr. Phil. Ac., 102.
Lower California.

HELODERMIDAE.

HELODERMA Wiegm., 1829, Isis, 627.
H. horridum Wiegm., l. c.
Mexico.
H. suspectum Cope (name only) 1875, Checklist, 47.
Utah to Mexico.

TEIIDAE.

CNEMIDOPHORUS Wagl., 1830, Syst. Amph., 154.
Lacerta 6-lineata Linn., 1766, Syst., 364.
Southern States to Colorado.
Ameiva tesselata Say, 1823, Long's Exp., II, 50.
Colorado.
(B) **Cnem. gracilis** B. & G., 1852, Pr. Phil. Ac., 128.
Desert of Colorado.
(C) **C. tigris** B. & G., 1852, Stansbury's Rep., 338.
Texas to California.
(D) **C. melanostethus** Cope, 1863, Pr. Phil. Ac., 104.
California.
C. inornatus B. & G., 1858, Pr. Phil. Ac., 255.
New Leon.

C. octolineatus Bd., 1858, l. c.
New Leon.
C. grahami B. & G., 1852, Pr. Phil. Ac., 128.
Texas to California.
C. maximus Cope, 1863, Pr. Phil. Ac., 104.
Lower California.
C. perplexus B. & G., 1852, l. c.
Texas; New Mexico.
C. mexicanus Pet., 1869, Mb., Brl. Akad., 62, pl. 34.
Mexico.
C. deppii Wiegm., 1834, Herp. Mex., 28.
Colima.
C. guttatus Wiegm., l. c., 29.
Mexico.
C. hyperethra Cope, 1863, Pr. Phil. Ac., 103. (?).
Lower California.

AMEIVA Meyer, 1795, Syn. Rept.
A. undulata Wiegm., 1834, Herp. Mex., 27.
Mexico.
Cnemidoph. praesignis B. & G., 1852, Pr. Phil. Ac., 129.
Acapulco.

ZONURIDAE.

BARISSIA Gray, 1838, Ann. Mag., 390.
Gerrhonotus olivaceus Bd., 1858, Pr. Phil. Ac., 255.
Mexico; California.

GERRHONOTUS Wiegm., 1828, Isis, 379.
Elgaria nobilis B. & G., 1852, Pr. Phil. Ac., 129.
Arizona; Sonora.
G. (Elgaria) kingi (Bell) Gray, 1838, Ann. Mag., 390.
Mexico.
G. deppei Wiegm., 1828, Isis, 379.
Mexico.
G. leiocephalus Wiegm., l. c.
Mexico.
G. imbricatus Wiegm., l. c.
Guanahuato.
G. rudicollis Wiegm., l. c.
Elgaria principis B. & G., 1852, Pr. Phil. Ac., 175.
California.

G. multicarinatus Blainv., 1835, Nouv. Ann. du Mus., 289, pl. 25, f. 2.
California.

Elgaria grandis B. & G., 1852, l. c., 176.
California; Oregon.

G. infernalis Bd., 1858, Pr. Phil. Ac., 255. (?).
Texas.

Tropidolepis scincicaudus Skilton, 1849, Am. Jour. Sci., 202.
California.

XENOSAURUS Pet., 1861, Mb. Brl. Ak., 453.
Cubina grandis Gray, 1856, Ann. Mag., 270.
Vera Cruz.

ANGUIDAE.

OPHEOSAURUS Daud., 1803, Rept., VII, 346.
Anguis ventralis Linn., 1766, Syst., 391.
South Carolina; New Mexico; Illinois.

ANNIELLIDAE.

ANNIELLA Gray, 1852, Ann. Mag., X, 440.
A. pulchra Gray, l. c.
California.

XANTUSIIDAE.

XANTUSIA Bd., 1858, Pr. Phil. Ac., 255.
X. vigilis Bd., l. c.
California.

SCINCIDAE.

OLIGOSOMA Grd., 1857, Pr. Phil. Ac., 196.
Scincus lateralis Say, 1823, Long's Exp., II, 324.
South Carolina; Mexico; Nebraska; Illinois.

EUMECES Wiegm., 1834, Herp. Mex., 36.
Lacerta fasciata Linn., 1758, Syst., I, 209.
Nebraska; Florida; South Carolina; Texas.
Plestiodon obsoletum B. & G., 1852, Pr. Phil. Ac., 129.
Kansas; Mexico.
P. inornatum Bd., 1858, l. c., 256.
Nebraska.

P. skiltonianum B. & G., 1852, Stansbury's Rep., 349.
California.
P. septentrionalis Bd., 1858, Pr. Phil. Ac., 256.
Texas; Minnesota.
P. egregius Bd., l. c.
Florida.
P. tetragrammus Bd., l. c.
Lower Rio Grande.
P. leptogrammus Bd., l. c.
Nebraska.
P. multivirgatus Hallow., 1857, Pr. Phil. Ac., 215.
Texas; Nebraska.
P. anthracinus Bd., 1849, Jour. Phil. Ac., I, 294.
Pennsylvania; Mississippi.
P. longirostris Cope, 1861, Pr. Phil. Ac., 313.
Bermudas.
Mabouia brevirostris Gthr., 1860, Pr. Z. S. Lond., 316.
Oaxaca.
Euprepes lynxe Wiegm., 1834, Herp. Mex., 36.
Guanaxuato.
Lamprosaurus guttulatus Hallow., 1853, Sitgreaves Rep., 113.
Arizona.
Eumeces onocrepis Cope, 1869, Rep. Peab. Ac., 82. (?).
E. hallowelli Boc., 1879, Miss. Sci. Mex., Rept., 435, pl. 22 *e*, f. 7.
California.
E. obtusirostris Boc., 1881, l. c., 441.
Texas.
(?)**Diploglossus millepunctatus** O'Shaug., 1874, Ann. Mag., 301.
N. W. N. America.

IGUANIDAE.

HOLBROOKIA Grd., 1850-51, Pr. A. A. A. S., 201.
H. maculata Grd., l. c.
Texas; Dakota; Sonora.
(B) **H. approximans** Bd., 1858, Pr. Phil. Ac., 253.
Tamaulipas.
(C) **H. propinqua** B. & G., 1852, Pr. Phil. Ac., 126.
Texas.
(D) **H. affinis** B. & G., l. c., 125.
Sonora.
Cophosaurus texanus Trosch., 1850 (1852), Arch. f. Natg. 389, Tab. VI.
Texas.

H. elegans Boc., 1874, Miss. Sci. Mex., Rept., 164, pl. 17 *bis*, f. 8.
Mazatlan.
H. lacerata Cope ?.
Texas.

CALLISAURUS Blainv., 1835, Nouv. Ann. Mus., 286.
C. draconoides Blainv., l. c., 286, pl. 24, f. 2.
(B) **Homalosaurus ventralis** Hallow., 1854, Sitgreaves Rep., 117.

UMA Bd., 1858, Pr. Phil. Ac., 253.
U. notata Bd., l. c.
Arizona.

SAUROMALUS Dum., 1856, Arch. Mus., 535.
S. ater Dum., l. c., 536.
California to Arizona.

CROTAPHYTUS Holbr., 1842, Herp., II, 79.
Agama collaris Say, 1823, Long's Exp., II, 252.
Kansas to New Mexico.
C. wislizenii B. & G., 1852, Stansb. Rep., 340.
California to Texas.
C. reticulatus Bd., 1858, Pr. Phil. Ac., 253.
Texas.
C. copii Yarr., 1882, Pr. U. S. Nat. Mus., 441.
California.

DIPSOSAURUS Hallow., 1854, Pr. Phil. Ac., VII.
Crotaphytus dorsalis B. & G., 1852, Pr. Phil. Ac., 126.
Colorado; California; Sonora.

UTA B. &. G., 1852, Stansb. Rep., 344.
U. ornata B. & G., 1852, Pr. Phil. Ac., 126.
Colorado; Texas; Sonora.
U. stansburiana B. & G., 1852, Stansb. Rep., 345.
Utah; Nevada.
U. schottii Bd., 1858, Pr. Phil. Ac., 253.
California.
U. thalassina Cope, 1863, Pr. Phil. Ac., 104. (?).
Lower California.
U. nigricauda Cope, (?).
Lower California.
U. graciosa Hallow., 1854, Pr. Phil. Ac., 92.
California.

U. elegans Yarr.
La Paz, Cal.

Phymatolepis bicarinatus Dum., 1856, Arch. Mus., VIII, 549.
Puebla, Mexico.

Phymatolepis (Uta) irregularis Fisch., 1881, Abh. Nat. Ver. Brem., VII, 232.
Mexico.

SCELOPORUS Wiegm., 1828, Isis, 369.

Agama torquata Peale & Green, Jour. Phil. Ac., VI, 231.
Texas; Mexico.

Stellio undulatus (Bosc.) Latr., 1801, Rept., II, 40.
Pennsylvania to Florida and California.

(B) **S. occidentalis** B. & G., 1852, Pr. Phil. Ac., 175.
California; Washington Territory.

(C) **S. thayeri** B. & G., l. c., 127.
Texas to Sonora.

S. scalaris Wiegm., 1828, Isis, 369.
Mexico; Sonora.

S. couchii Bd., 1858, Pr. Phil. Ac., 254.
New Leon.

S. ornatus Bd., 1859, Mex. Bound., Rept., 5.
Sonora.

S. poinsetti B. & G., 1852, Pr. Phil. Ac., 126.
Texas; Sonora.

S. garmani Blgr., 1882, Pr. Z. S. Lond., 761, pl. 56.
Southern Dakota; Nebraska.

S. marmoratus Hallow., 1852, Pr. Phil. Ac., 178.
Southern California.

S. biseriatus Hallow., 1859, P. R. R. Rep., X, Williamson, 6.
Mexico.

S. consobrinus B. & G., 1854, Marcy's Exp., 208.
Utah; California.

(B) **S. gratiosus** B. & G., 1852, Pr. Phil. Ac., 69.
Utah.

S. Clarkii B & G., 1852, l. c., 127.
Arizona; Sonora.

(B) **S. zosteromus** Cope, 1863, Pr. Phil. Ac., 105.
Cape St. Lucas.

S. horridus Wiegm., 1834, Herp. Mex., 50.
Vera Cruz; Colima.

S. formosus Wiegm., l. c.
Colima.

S. microlepidotus Wiegm., l. c., 51.
Puebla; Colima.
S. floridanus Bd., 1858, Pr. Phil. Ac., 254.
Florida.
S. spinosus Wiegm., 1828, Isis, 369.
Mexico.
S. dugesi Boc., 1874, Miss. Sci. Mex., 188, p. 18, f. 7.
Colima.
S. jarrovi (Cope) Yarr., 1875, Wheeler's Rep., V, 569.
Arizona.
S. smaragdinus Yarr., l. c., 572.
Utah; Nevada.
S. tristichus Yarr., l. c.
Taos, New Mexico.
S. rufidorsum Yarr., 1882, Pr. Nat. Mus., 442.
La Paz, California.
S. utiformis Cope, 1864, Pr. Phil. Ac., 177.
Colima, Mexico.
S. gracilis B. & G., 1852, Pr. Phil. Ac., 75.
California.

PHRYNOSOMA Wiegm., 1828, Isis, 367.
Lacerta orbicularis Linn., 1758, Syst., I, 206.
Mexico.
Agama douglassi Bell, 1829, Trans. Linn. Soc., XVI, 105, pl. 10.
Dakota; Arizona.
(B) **Tapaya ornatissima** Grd., 1858, Wilkes Exp., Rept., 396.
Arizona; Mexico.
(C) **P. pygmaea** Yarr., 1882, Pr. U. S. Mus., 443.
Oregon.
Tapaya hernandesi Grd., 1858, Wilkes Exp., 395.
Mexico.
P. regale Grd., l. c., 406.
Arizona; New Mexico.
P. modestum Grd., 1852, Stansb. Rep., 365.
Texas; Arizona; New Mexico.
P. platyrhinum Grd., l. c., 361.
Utah; Arizona; Nevada.
Agama (Phrynos.) coronata Blainv., 1835, Nouv. Ann., 284, pl. 25, f. 1.
California.
P. blainvillei Gray, 1839, Rept. Beechey's Voy., 96, pl. 29, f. 1.
California; Arizona.

Agama cornuta Harl., 1825, Jour. Phil. Ac., IV, 299, pl. 20.
Texas; Mexico;
Anota mc'calli Hallow., 1852, Pr. Phil. Ac., 182.
Arizona; Nevada.
Tapaya boucardi Boc., 1874, Miss. Sci. Mex., 225, pl. xi, f. 4.
Mexico plateau.
P. braconnieri Boc., l. c., 233, pl. 7.
Oaxaca.
P. taurus Duges, 1869, Cat. Vert. Mex.
Mexico.
P. planiceps Hallow., 1852, Pr. Phil. Ac., 178.
Western Texas.
P. asio Cope, Pr. Phil. Ac., 178.
California; Mexico.

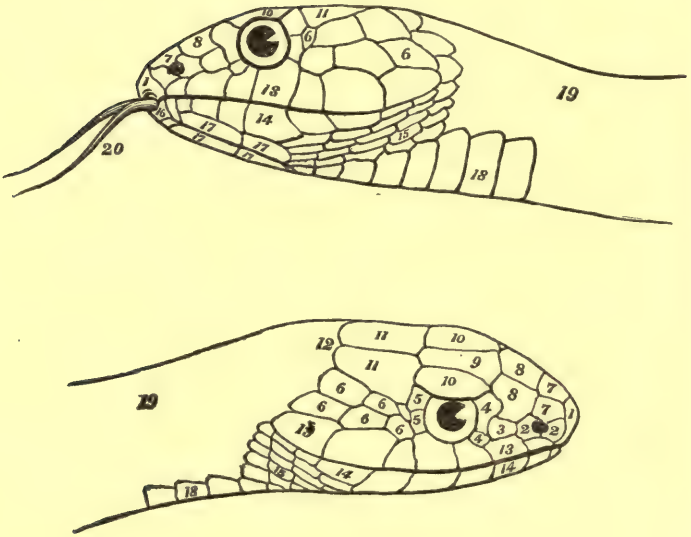
CYCLURA Harl., 1825, Jour. Phil. Ac., IV, 242.
Lacerta acanthura Shaw, 1802, Zool., III, 216.
Mexico; California.
C. teres Harl., l. c., 246.
Vera Cruz; California.
C. pectinata Wiegm., 1834, Herp. Mex., 42, pl. 2.
Colima.
Ctenosaura cycluroides Wiegm., 1828, Isis, 371.
C. (Ctenosaura) hemilopha Cope, 1863, Pr. Phil. Ac., 105.
Cape St. Lucas.

ANOLIS Daud., 1802, Rept., IV, 50.
Lacerta principalis Linn., 1754, Mus. Ad., — 1758, Syst., I, 201.
North Carolina to Texas.
A. sericeus Hallow., 1856, Pr. Phil. Ac., 227.
Jalapa, Mexico.
A. cooperi Bd., 1858, Pr. Phil. Ac., 254.
California.
A. tropidonotus Pet., 1863, Mb. Brl. Ak., 135.
Orizaba.
A. cymbos Cope, 1864, Pr. Phil. Ac., 173.
Vera Cruz.

AMPHISBAENIDAE.

CHIROTES Cuv., 1817, R. An., Ed. 1, 57.
Bipes canaliculatus Bounat., 1789, Erpetol., 68.
California; Mexico.
LEPIDOSTERNON Wagler, 1824, Spix Serp. Brazil, 70.
L. floridanum Baird, 1858, Pr. Phil. Ac., 225.
Florida.

OPHIDIA.



COLUBER CONSTRICTOR.

1 Rostral.
2 Nasals.
3 Loreal.
4 Preoculars or Anteorbitals.
5 Postoculars or Postorbitals.
6 Temporals.
7 Internasals.
8 Prefrontals.
9 Frontal.
10 Supraciliaries or Supraoculars.
11 Parietals.
12 Occipitals.
13 Labials.
14 Infralabials.
15 Gulars.
16 Mental.
17 Submentals.
18 Ventrals.
19 Dorsals.
20 Tongue.

SCOLECOPHIDIA.

TYPHLOPIDAE.

TYPHLOPINAE.

TYPHLOPS Schneid., 1801, Amph., II, 339.

Ophthalmidion longissimum D. & B., 1844, Erp., VI, 263.
Texas; "North America."

T. perditus Pet., 1869, Mb. Brl. Ak., 435.
Orizaba.

T. basimaculatus Cope, 1866, Pr. Phil. Ac., 320.
Cordova; Orizaba.

T. emunctus Garman, 1883, Mem. Mus. Comp. Zool., Rept., 3.
Central America.

STENOSTOMINAE.

ANOMALEPIS Jan, 1861, Arch. Zool., 185.

A. mexicanus Jan, l. c.
Mexico.

STENOSTOMA Wagl., 1824, Spix Serp. Braz., 68.

Rena dulcis B. & G., 1853, Serp., 142.
Texas.

R. humilis B. & G., l. c., 143.
Valliecetas, California.

S. rubellum Grmn., 1883, Mem. M. C. Z., Rept., 130.
Uvalde, Texas.

S. tenuiculum Grmn., l. c., 5.
San Luis Potosi, Mexico.

S. myopicum Grmn., l. c., 6.
Tampico, Mexico.

SIAGONODON Pet., 1881, Gesellsch., 71.

S. dugesi Boc., 1882, Miss. Sci. Mex., Rept., 507, pl. 29, f. 9.
Colima.

ONYCHOPHIDIA.

ERYCIDAE.

CHARINA Gray, 1849, Cat. Snakes, 113.

Tortrix bottae Blainv., 1835, Nouv. Ann. Mus., 289, pl. 26, f. 1.
California to Mexico.

Wenona plumbea B. &. G., 1853, Serp., 154.
California to Puget Sound.
Lichanura trivirgata Cope, 1861, Pr. Phil. Ac., 304.
Lower California; Mexico.
(B) **L. myriolepis** Cope, 1868, Pr. Phil. Ac., 2.

BOIDAE.

BOA Linn., 1758, Syst., I, 214.
B. imperator Daud., 1802, Rept., V, 150.
Central America; Mexico.
B. mexicana Rapp.
Mexico.

CHILABOTHRUS D. & B., 1844, Erp., VI, 562.
Boa inornata Reinh., 1843, Dansk. Vid. Selsk., pl. 21–23.
West Indies; Central America; Mexico.

ACACOPHIDIA.

COLUBROIDEA.

DIPSADIDAE.

LEPTOGNATHUS Dum., 1852, Mem. Acad., XXIII, 467.
Tropidodipsas fasciata Gthr., 1858, Cat. 181.
Mexico.
L. dumerili Jan, 1863, Sist., 101.
Mexico.
Coluber nebulatus Linn., 1754, Mus. Ad., 32, pl. 24, f. 1.
Brazil to Mexico; West Indies (Gthr.).
L. dimidiatus Gthr., 1872, Ann. Mag., 31.
Mexico.
L. brevis Dum., 1852, Mem. Acad., 23, p. 467.
Mexico.

SIBON Fitz., 1826, Neue Class., 60.
Dipsas biscutata D. & B., 1854, Erp., VII, 1153.
Central America to Mexico.
(B) **Dipsas biscutata** var. **latifascia** Pet., 1869, Mb. Brl. Ak., 877.
Pueblo, Mexico.
Coluber annulatus Linn., 1754, Mus. Ad. Fridr., pl. 8, f. 2.
Mexico to Brazil.
(B) **Dipsas septentrionalis** Kenn., 1859, Mex. Bound., II, 16, pl. viii, f. 1.
Texas; Arizona; Mexico.

Leptodeira torquata Gthr., 1860, Ann. Mag.
Nicaragua.
(B) **L. pacifica** Cope, 1868, Pr. Phil. Ac., 310.
Mazatlan, Mexico.
(C) **L. personata** Cope, l. c.
Mazatlan.
L. discolor Gthr., 1860, Pr. Zool. Soc., 317.
Oaxaca.

DENDROPHIDAE.

LEPTOPHIS Bell, 1825, Zool. Jour., 329.
L. mexicanus D. & B., 1854, Erp., VII, 536.
Mexico.

NATRICIDAE.

TROPIDONOTUS Kuhl, 1826, Isis, 205.
(**CHILOPOMA.**)
C. rufipunctatum Yarr., 1875, Wheeler's Exp., V, 543, pl. xx, f. 1.
Southern Arizona.
(**EUTAENIA.**)
Coluber saurita Linn., 1766, Syst., I, 385.
Mississippi valley to Atlantic.
(B) **Eutaenia faireyi** B. & G., 1853, Serp., 25.
Minnesota and Wisconsin southward.
(C) **E. Sackenii** Kenn., 1859, Pr. Phil. Ac., 98.
Florida.
(D) **Coluber proximus** Say, 1823, Long's Exp., I, 187.
Arkansas and Texas to Mexico.
(E) **E. radix** B. & G., 1853, Serp., 34.
Wisconsin; Illinois.
Coluber sirtalis Linn., 1758, Syst., I, 222.
Nova Scotia to Mississippi valley.
(B) **C. ordinatus** Linn., 1766, Syst., I, 379.
Coast from Nova Scotia to Georgia and Alabama.
(C) **E. marciana** B. & G., 1853, Serp., 36.
Kansas to Texas and Mexico.
(D) **Coluber parietalis** Say, 1823, Long's Exp., I, 186.
Missouri basin to Utah.
(E) **E. vagrans** B. & G., 1853, Serp., 35.
Rocky mountains to Sierras; Sonora.
(F) **Trop. collaris** Jan, 1863, Sist., 69.
Southern Mexico; Panama.

(G) **E. leptocephala** B. & G., 1853, Serp., 29.
Oregon.

(H) **Coluber infernalis** Blainv., 1835, Nouv. Ann. Mus., 291, pl. 26, f. 3.
California to Mexico.

(I) **E. atrata** Kenn., 1860, P. R. R. Rep., XII, 296.
California.

(J) **Trop. quadriserialis** Fisch., 1879, Verh. Nat. Ver. Hamb., 82.
Mazatlan.

Atomarchus multimaculatus Cope, 1883, Am. Nat., 1300.
New Mexico.

(**NERODIA.**)

Coluber sipedon Linn., 1758, Syst., I, 219.
Mississippi valley to Maine.

(B) **C. fasciatus** Linn., 1766, Syst., I, 378.
Southern States.

(C) **C. erythrogaster** Holbr., 1838, Herp., II, 91, pl. 19.
Southeastern States.

(D) **Trop. rhombifer** B. & G., 1852, Pr. Phil. Ac., 177.
Mississippi valley to Wisconsin.

Trop. taxispilotus Holbr., 1842, Herp., IV, 35, pl. 8.
Southeastern States.

T. cyclopion D. & B., 1854, Erp., VII, 576.
Ohio to Florida.

Nerodia compressicauda Kenn., 1860, Pr. Phil. Ac., 335.
Florida.

(**REGINA.**)

Coluber leberis Linn., 1758, Syst., I, 216.
Michigan to Texas.

(B) **C. rigidus** Say, 1825, Jour. Phil. Ac., 239.
New York, southward and westward.

(C) **Regina clarkii** B. & G., 1853, Serp., 48.
Texas to Mexico.

(D) **R. grahamii** B. & G., l. c., 47.
Michigan to Texas.

(E) **R. valida** Kenn., 1860, Pr. Phil. Ac., 334.
California to Mexico.

R. kirtlandi Kenn., 1856, Pr. Phil. Ac., 95.
Illinois to Ohio.

STORERIA B. & G., 1853, Serp., 135.

Tropidoclonium storerioides Cope, 1865, Pr. Phil. Ac., 190.
Mexico.

Tropidonotus occipitomaculatus Storer, 1839, Rept. Mass. 230.
Mississippi valley and eastward.
Trop. dekayi Holbr., 1842, Herp., IV, 53, pl. 14.
Maine to Mexico.
Adelophis copei Cope, 1879, Pr. Am. Phil. Soc., 265.
Guadalaxara.
Microps lineatus Hallow., 1856, Pr. Phil. Ac., 241.
Texas to Kansas.

HELICOPS Wagler, 1830, Amph., 170.
H. alleni Grmn., 1874, Pr. B. N. H. Soc., 92.
Florida.

HYDROPS Wagl., 1830, Amph., 170.
Coluber erythrogrammus Latr., 1802, Rept., IV, 141.
Illinois and Virginia southward.
C. abacurus Holbr., 1836, Herp., I, 119, pl. 23.
North Carolina to Texas.
Homalopsis quinquevittatus D. & B., 1854, Erp., VII, 975.
Mexico; Central America.
Calopisma septemvittatum Fisch., 1879, Verh. Nat. Ver. Hamb., 84.
Mexico.

COLUBRIDAE.

SALVADORA B. & G., 1853, Serp., 104. (Not preoccupied among animals.)
S. grahamii B. & G., l. c.
California to Mexico; Utah to Texas.
(B) **S. bairdii** Jan, 1861, Icon., livr. 1, pl. 3, f. 2.
Mexico.
(C) **Phymothyra hexalepis** Cope, 1866, Pr. Phil. Ac., 305.
Arizona.
Phym. decurtata Cope, 1868, Pr. Phil. Ac., 310.
Lower California.

CYCLOPHIS Gthr., 1858, Cat. Serp., 119.
Coluber vernalis (De K.) Harl., 1827, Jour. Phil. Ac., 361.
Nova Scotia to Rocky Mountains.

PHYLLOPHILOPHIS Grmn., 1883, Mem. M. C. Z., Rept., 40, 146.
Maryland to Mexico.
Coluber aestivus Linn., 1766, Syst., I, 387.

COLUBER Linn., 1748, Syst., p. 34, —1758, Syst., I, 216, —1766, Syst., I, 375 (Part.).

(**BASCANIUM.**)

Coluber constrictor Linn., 1758, Syst., I, 216, —1766, Syst., 1, 385.
Nova Scotia to Texas.

(B) **C. flaviventris** Say, 1823, Long's Exp., I, 185.
Mississippi valley west to Pacific.

Coryphodon mentovarius D. & B., 1854, Erp., VII, 187.
Mexico.

(**MASTICOPHIS.**)

Coluber flagellum Shaw, 1802, Zool., III, 475.

(B) **C. testaceus** Say, 1823, Long's Exp., 248.
Dakota to Texas and the Pacific.

(C) **Drymobius aurigulus** Cope, 1861, Pr. Phil. Ac., 301.
Lower California.

Zamenis mexicanus D. &. B., 1854, Erp., VII, 695.
Mexico.

Masticophis spinalis Pet., 1866, Mb. Brl. Ak., 91.
Mexico.

Leptophis taeniata Hallow., 1852, Pr. Phil. Ac., 181.
Plains to the Pacific.

(B) **Masticophis bilineatus** Jan, Sist., 40.
Mexico.

SPILOTES Wagler, 1830, Amph., 179.

(**GEORGIA.**)

Coluber couperi Holbr., 1842, Herp., III, 75, pl. 16.
Gulf States.

C. obsoletus Holbr., l. c., 61, pl. 12.
Florida to Texas.

(**SPILOTES.**)

Coluber corais (Cuv.) Boie., 1827, Isis, 537.
Brazil to Mexico.

C. variabilis Max., 1825, Beitr., 271.
Mexico to Brazil.

(B) **Spilot. pullatus** var. **auribundus** Cope, 1861, Pr. Phil. Ac., 300.
Mexico.

S. melanurus D. & B., 1854, Erp., VII, 224.
Mexico.

S. poecilonotus Gthr., 1858, Cat. Serp., 100.
Mexico.

PITYOPHIS Holbr., 1842, Herp., IV, 7.

Coluber melanoleucus Daud., 1803, Rept., VI, 409.
East of the Mississippi, Ohio and Pennsylvania southward.

C. catenifer Blainv., 1835, Nouv. Ann. Mus., IV, 290, pl. 26, f. 2.
Oregon to Mexico.

(B) **C. sayi** Schleg., 1837, Ess., II, 157.
Rocky Mountains to Illinois.

(C) **P. mexicanus** D. & B., 1854, Erp., VII, 236.
Mexico.

(D) **Elaphis deppei** D. & B., 1854, Erp., VII, 268.
Arizona to Mexico.

(E) **Churchillia bellona** B. & G., 1852, Stansb. Exp., 350.
Utah basin.

(F) **C. vertebralis** Blainv., 1835, l. c., 293, pl. 27, f. 2.
Lower California.

ELAPHIS Aldrov., 1640, Serp. Drac., 267, —1765, reprint; Bonap., 1831, Saggio.

(**SCOTOPHIS.**)

Coluber obsoletus Say, 1823, Long's Exp., I, 140.
Mississippi valley.

(B) **C. alleghaniensis** Holbr., 1842, III, 219.
New England to Alabama.

(C) **S. lindheimeri** B. & G., 1853, Serp., 74.
Illinois to Texas.

(D) **C. bairdi** Yarr., 1880, Bull. U. S. Mus., 41.
Fort Davis, Texas.

(E) **S. confinis** B. & G., 1853, Serp., 76.

C. guttatus Linn., 1766, Syst., I, 385.
Virginia to Louisiana.

(B) **S. vulpinus** B. & G., 1853, Serp., 75.
Massachusetts to Nebraska.

C. quadrivittatus Holbr., l. c., 80, pl. 20.

DROMICUS Bibr., 1843, Rept. Cuba, Sagra, 221.

D. laureatus Gthr., 1868, Ann. Mag., 419.
City of Mexico.

D. flavilatus Cope, 1871, Pr. Phil. Ac.
Florida to North Carolina.

Herpetodryas margaritiferus Schleg., 1837, Ess., I, 151, II, 184.
Mexico; Central America.

D. putnamii Jan, 1863, Sist., 67.
Southern Mexico.

CORONELLIDAE.

TACHYMENIS Wiegm., 1834, Act. Acad. Caes. Leop., 252.

Tomodon lineatum D. & B., 1854, Erp., VII, 936.
Mexico.

Taeniophis imperialis B. & G., 1855, Gilliss' Exp., II, 215.
Texas and Mexico.

Coniophanes lateritia Cope, 1861, Pr. Phil. Ac., 524.
Guadalaxara.

Coniophanes proterops Cope, 1860, Pr. Phil. Ac., 249.
Mexico; New Granada.

Coronella fissidens Gthr., 1858, Cat. Serp., 36.
Mexico.

Coronella bipunctata Gthr., l. c.
Mexico.

T. melanocephala Pet., 1869, Mb. Brl. Ak., 876.
Mexico.

ERYTHROLAMPRUS Boie, 1826, Isis, 981.

E. guentheri Grmn., 1883, Mem. M. C. Z., Rept., 63.
=**E. venustissimus** var. **D** Gthr., 1858, Cat., 48.
"Mexico."

OPHIBOLUS B. & G., 1853, Serp., 82.

Coluber doliatus Linn., 1766, Syst., 1, 379.
Southeastern States.

Osceola elapsoidea B. & G., 1853, Serp., 133.
Southern States east of Mississippi river.

C. triangulus Boie, 1827, Isis, 537.
Mississippi valley eastward to Canada.

(B) **C. calligaster** Harl., 1835, Med. Res., 122.
Northern Mississippi valley.

(C) **O. triang.** var. **mexicanus** Grmn., 1883, Mem. M. C. Z., Rept., 66.
San Luis Potosi.

(D) **O. doliatus** B. & G., 1853, Serp., 89.
Nebraska and southward.

(E) **O. gentilis** B. & G., l. c., 90.
Arkansas to Utah.

(F) **C. (Zacholus) zonatus** Blainv., 1835, Ann. Mus., IV, 293.
California.

(G) **Lampropeltis annulata** Kenn., 1860, Pr. Phil. Ac., 329.
Mexico.

(H) **Coronella rhombomaculata** Holbr., 1842, Herp., III, 103, pl. 23.
Southeastern U. S.

Coluber getulus Linn., 1766, Syst., I, 382.
Southern States to Texas.

(B) **Coronella sayi** Holbr., 1842, Herp., III, 99, pl. 22.
Mississippi valley, Illinois to Texas.

(C) **O. boylii** B. & G., 1853, l. c., 82.
California to Mexico.

(D) **O. splendidus** B. & G., l. c., 83.
Arizona and southern California to Mexico.

(E) **O. pyrrhomelanus** Cope, 1866, Pr. Phil. Ac., 305.
Arizona; Sonora.

LIOPHIS Wagl., 1830, Amph., 187.

Pliocercus elapoides Cope, 1860, Pr. Phil. Ac., 253.
Mexico.

DIADOPHIS B. & G., 1853, Serp., 112.

Enicognathus annulatus D. & B., 1854, Erp., VII, 335, pl. 80, f. 1–3.
Mexico.

Coronella decorata Gthr., 1858, Cat. Serp., 35.
Southern Mexico.

Rhadinea fulvivitta Cope, 1875, Jour. Phil. Ac., 139.
Southern Mexico.

Coluber punctatus Linn., 1766, Syst., I, 376.
Southern and Eastern States to Nova Scotia.

(B) **D. arnyi** Kenn., 1859, Pr. Phil. Ac., 99.
Illinois to Arkansas.

(C) **D. docilis** B. & G., 1853, Serp., 114.
Texas to Mexico.

(D) **D. amabilis** B. & G., l. c., 113.
Arizona to California.

D. regalis B. & G., l. c., 115.
Mexico.

RHINOCHEILUS B. & G., 1853, Serp., 120.

R. lecontei B. & G., l. c., 120, 161.
Texas to California.

(B) **R. lecontei** var. **tesselatus** Grmn., 1883, Mem. M. C. Z., Rept., 74.
Mexico.

HETERODON (Pal. de Beauv., 1799) Latr., 1802, Rept., IV, 32.

H. platyrhinus Latr., l. c., 32, pl. 28, f. 1–3.
Eastern, Middle and Southern States.

(B) **H. niger** Troost, 1836, Ann. N. Y. Lyc., 186.
Southern States east of Mississippi river.

Coluber simus Linn., 1766, Syst., I, 375.
Mississippi valley to the Atlantic.

(B) **H. nasicus** B & G., 1852, Stansb. Exp., 352.
California to Texas and Nebraska.

(C) **H. kennerlyi** Kenn., 1860, Pr. Phil. Ac., 336.
Sonora.

CEMOPHORA Cope, 1860, Pr. Phil. Ac., 244.

Coluber coccinneus Blumenb., 1788, Licht. & Voigt. Mag., pl. V.
Southern States east of Texas.

(B) **C. copei** Jan, 1863, Sist., 45.
Tennessee.

XENODON Boie, 1827, Isis, 541.

X. bertholdi Jan, 1863, Arch. Zool., II, 108.
Mexico.

HYPSIGLENA Cope, 1860, Pr. Phil. Ac., 246.

H. ochrorhynchus Cope, l. c.
Lower California.

(B) **H. chlorophaea** Cope, l. c.
Arizona to Sonora.

CALAMARIDAE.

FICIMIA Gray, 1849, Cat. Serp., 80.

Toluca frontalis Cope, 1864, Pr. Phil. Ac., 167.
Colima.

Gyalopion canum Cope, 1860, Pr. Phil. Ac., 243, 310.
Arizona.

Conopsis nasus Gthr., 1858, Cat., 6.
California.

Toluca lineata (Kenn.) Bd., 1859, Mex. Bound., II, Rept., 23, pl. 21, f. 2.
Mexico.

Oxyrhina maculata Jan, 1862, Arch. Zool., II, 54, 61.
Mexico.

Amblymetopon variegatum Gthr., 1858, Cat. Serp., 7.
Mexico.

F. olivacea Gray, 1849, Cat. Serp., 80.
Mexico.

CHEILORHINA Jan., 1862, Arch. Zool., II, 57.
C. villarsii Jan., l. c.
Western Mexico.

STENORHINA D. & B., 1854, Erp., VII, 865.
S. freminvillei D. & B., l. c., 868.
Central America and Mexico.
Microphis quinquelineatus Hallow., 1854, Pr. Phil. Ac., 97.
Mexico.

TANTILLA B. &. G., 1853, Serp., 131.
T. gracilis B. & G., l. c., 132, 161.
Texas.
(B) **T. hallowelli** Cope, 1860, Pr. Phil. Ac., 77.
Kansas.
(C) **T. calamarina** Cope, 1866, Pr. Phil. Ac., 320.
Guadalaxara.
T. nigriceps Kenn., 1860, Pr. Phil. Ac., 328.
Texas; New Mexico.
T. coronata B. & G., 1853, Serp., 131.
Gulf States.
(B) **Homalocranion wagneri** Jan, 1862, Arch. Zool., II, 50.
Florida.
Coluber planiceps Blainv., 1835, Ann. Mus., IX, 294, pl. 27, f. 3.
California.

ELAPOMORPHUS (Wiegm.) Fitz., 1843, Syst., 25.
E. mexicanus Gthr., 1862, Ann. Mag., pl. 9, f. 1 (Extr., p. 6).
Mexico.

CONTIA B. & G., 1853, Serp., 110.

(**SONORA.**)
S. semiannulata B. & G., 1853, Serp., 110.
Sonora.
Rhinostoma occipitale Hallow., 1854, Pr. Phil. Ac., 95.
Arizona.
(B) **Lamprosoma annulatum** Bd., 1859, Mex. Bound., II, 22.
Arizona.
C. isozona Cope, 1866, Pr. Phil. Ac., 304.
Arizona to Utah.

(**PROCINURA.**)
P. aemula Cope, 1871, Pr. Phil. Ac., 223. (?Position).
Mexican plateau.

(CONTIA.)

C. mitis B. & G., 1853, Serp., 110.
California.

Lamprosoma episcopum Kenn., 1859, Mex. Bound., II, Rept., 22, pl. 8, f. 1.
Texas.

LODIA B & G., 1853, Serp., 116.

Calamaria tenuis B. & G., 1852, Pr. Phil. Ac., 176.
Oregon and Washington Territory.

NINIA B. & G., Serp., 49.

Chersodromus liebmanni Reinh., 1860, Vid. Medd. Kjobenh., 35, pl. IV, f. 10, 11.
Vera Cruz; Mexico.

Streptophorus sebae D. & B., 1854, Erp., VII, 515.
Mexico.

S. sebae var. **collaris** Jan, 1865, Icon., livr. 12, pl. 3, f. 6.
Mexico.

Elapoides sieboldi Jan, 1862, Arch. Zool., II, 21.
Mexico.

N. dimidiata B. & G., 1853, Serp., 49.
Mexico.

VIRGINIA B. & G., 1853, Serp., 127.

Coluber striatulus Linn., 1766, Syst., I, 375.
Virginia to Texas.

V. inornata Grmn., 1883, Mem. M. C. Z., Rept., 97.
Texas.

V. elegans Kenn., 1859, Pr. Phil. Ac., 99.
Southern Illinois.

V. valeriae B. & G., l. c., 127.
Maryland to Georgia and Illinois.

(B) **Carphophis harperti** D. & B., 1854, Erp., VII, 135.
Georgia to Texas.

CARPHOPHIS Gerv., 1843, D'Orb. Dict. N. Hist., III, 191.

Chilomeniscus stramineus Cope, 1861, Pr. Phil. Ac., 33.
Lower California.

Chilom. cinctus Cope, l. c., 303.
Guaymas.

Celuta helenae Kenn., 1859, Pr. Phil. Ac., 100.
Illinois to Mississippi.

Carphophis amoena Gerv., 1843, l. c., 191.
Massachusetts to Illinois and southward.

(B) **Celuta vermis** Kenn., 1859, Pr. Phil. Ac., 99.
Missouri and southward.

GEOPHIS Wagler, 1830, Amph., 342.

Rabdosoma semidoliatum D. & B., 1854, Erp., VII, 93.
Mexico.

G. bicolor Gthr., 1868, Ann. Mag., 413.
Valley of Mexico.

G. latifrontalis Grmn., 1883, Mem. M. C. Z., Rept., 103.
San Luis Potosi.

G. unicolor Fisch., 1881, Abh. Nat. Ver. Brem., VII, 227, pl. xv, f. 1–3.
Mexico.

Sympholis lippiens Cope, Pr. Phil. Ac., 524.
Guadalaxara.

TOXICOPHIDIA.

PROTEROGLYPHA.

CONOCERCA.

ELAPIDAE.

ELAPS Schneid., 1801, Amph., 289.

Coluber fulvius Linn., 1766, Syst., I, 381.
Southern States east of the Mississippi.

(B) **E. nigrocinctus** Grd., 1854, Pr. Phil. Ac., 226.
Central America to Mexico.

(C) **E. affinis** Jan, 1859, Rev. and Mag. Zool., 6, 14, pl. B, f. 2.
Mexico.

(D) **E. bipunctiger** D. & B., 1854, Erp., VII, 1227.
Mexico; Florida.

(E) **E. tenere** B. & G., 1853, Serp., 22, 156.
Texas.

(F) **E. apiatus** Jan, 1859, l. c., pp. 6, 11, pl. A, f. 4.
Vera Cruz.

(G) **E. epistema** D. & B., 1854, Erp., VII, 1222.
Mexico.

(H) **E. diastema** D. & B., l. c., 1222.
Mexico.

(I) **E. cerebripunctatus** Pet., 1869, Mb. Brl. Ak., 877.
Pueblo.

E. euryxanthus Kenn., 1860, Pr. Phil. Ac., 337.
Arizona to Mexico.

E. marcgravii var. **laticollaris** Pet., 1869, Mb. Brl. Ak.
Pueblo.

E. decoratus Jan, 1859, l. c., pp. 7, 14, pl. B, f. 5.
Mexico.
E. elegans Jan, l. c., pp. 6, 13, pl. B, f. 1.
Mexico.

PLATYCERCA.

HYDROPHIDAE.

PELAMIS Daud., 1803, Rept., VII, 357.
Anguis platura Linn., 1766, Syst., I, 391.
West coast of Mexico and Central America to East Indies and China.

SOLENOGLYPHA.

BOTHROPHERA.

CROTALIDAE.

CROTALUS Linn., 1754, Mus. Ad. Fridr., 39.
C. durissus Linn., 1758, Syst., I, 214.
Brazil to Mexico.
(B) **C. molossus** B. & G., 1853, Serp., 10.
North Mexico; Arizona; New Mexico.
(C) **Caudisona basilisca** Cope, 1864, Pr. Phil. Ac., 166.
Western Mexico.
C. adamanteus Beauv., 1799, Trans. Ann. Phil. Soc., IV, 368.
Texas to North Carolina.
(B) **Caudisona scutulatus** Kenn., 1861, Pr. Phil. Ac., 207.
Arizona; Mexico.
(C) **Crotalus atrox** B. & G., l. c., 5, 156.
Texas to Mexico.
C. confluentus Say, 1823, Long's Exp., II, 48.
Dakota to Texas.
(B) **Caudisona pyrrha** Cope, 1866, Pr. Phil. Ac., 308, 310.
Arizona.
C. oregonus Holbr., 1842, III, 21, pl. 3.
Oregon to California.
(B) **C. lucifer** B. & G., 1852, Pr. Phil. Ac., 177.
California to Mexico.
(C) **C. lucifer** var. **cerberus** Coues, 1875, Wheeler's Rep., V, 607.
Arizona.

(D) **Caudisona mitchellii** Cope, 1861, Pr. Phil. Ac., 293.
Lower California.

(E) **Caud. enyo** Cope, l. c., 293.
Lower California.

Crotalus exsul Grmn., 1883, Mem. M. C. Z., Rept., 114.
Cedros Island.

C. horridus Linn., 1758, Syst., I, 214.
New England to Texas.

C. cerastes Hallow., 1854, Pr. Phil. Ac., 95.
California; Arizona; Mexico.

?Caudisona lepida Kenn., 1861, Pr. Phil. Ac., 206.
Mexico.

Crotalus tigris (Kenn.) Bd., 1859, Mex. Bound., II, Rept., 14, pl. 4.
Mexico.

C. triseriatus Wiegm., 1828, Mus. Berl.
Mexico.

(B) **C. jimenezii** Duges, 1879, La Naturaleza, IV, 23.
Mexico.

SISTRURUS Grmn., 1883, Mem. M. C. Z., Rept., 110, 118, 176.

Crotalinus catenatus Raf., 1818, Am. Month. Mag., IV, 41.
Ohio and Michigan to the Plains and south to Mississippi.

(B) **Crotalophorus consors** B. & G., 1853, Serp., 12.
Texas.

Crotalus miliarius Linn., 1766, Syst., I, 372.
Southern States.

(B) **Crotaloph. edwardsii** B. & G., l. c., 15.
Texas; Arizona; Sonora; Mexico.

(C) **Crotalus ravus** Cope, 1865, Pr. Phil. Ac., 191.
Mexican plateau.

Crotalus intermedius Fisch., 1881, Abh. Nat. Ver. Brem., VII, 230, pl. XIV, f. 1–4.
Mexico.

ANCISTRODON Pal. de Beauv., 1799, Trans. Am. Phil. Soc., IV, 381.

Coluber contortrix Linn., 1758, Syst., I, 216.
Mississippi valley to New England.

(B) **Acontias atrofuscus** Troost., 1836, Ann. N. Y. Lyc., 181. Mountains from Virginia southward.

Crotalus piscivorus LaC., 1789, Quad. Ovip. Serp., II, pp. 130, 424.
South Carolina to Texas.

(B) **Toxicophis pugnax** B. & G., 1853, Serp., 20, 156.
Texas.

A. bilineatus Gthr., 1863, Ann. Mag., 364.
West Mexico; Tehuantepec.

BATRACHIA.

APODA.

CAECILIIDAE.

DERMOPHIS Pet., 1879, Mb. Brl. Akad., 937.
Siphonops mexicanus D. & B., 1841, Erp., VIII, 284.
Mexico.

CAUDATA.

SIRENIDAE.

SIREN Linn., 1766, Act. Acad. Upsal. (dissert. auct. Osterdam), 15.
S. lacertina Linn., 1766, l. c.
North Carolina to Illinois and Mexico.

PSEUDOBRANCHUS Gray, 1825, Ann. Phil., 216.
Siren striata LeC., 1824, Ann. Lyc. N. Y., I, 54, pl. 4.
South Carolina; Georgia; Simahmoo Bay, Washington Territory (Yarrow).

PROTEIDAE.

NECTURUS Raf., 1819, Jour. Phys., Vol. 88, 417.
N. maculatus Raf., l. c.
Mississippi valley and eastward; Canada.
Menobranchus punctatus Gibbes, 1853, Jour. B. N. H. Soc., 369.
North Carolina; South Carolina.

AMPHIUMIDAE.

AMPHIUMA Linn., Garden, 1821, Linn. Corresp., Smith, 333.
A. means Linn., 1821, l. c., 333, 532, 599.
North Carolina to Louisiana.
A. tridactyla Cuv., 1828, Mem. Mus., XIV, pl. 1.

CRYPTOBRANCHUS Leuck., 1821, Isis, 257.

Salamandra alleghaniensis Latr., 1802, Rept., II, 253 (index).
New York to Missouri.

Menopoma fusca Holbr., 1842, Herp., V, 99, pl. 33.
Pennsylvania to Louisiana.

SALAMANDROIDEA.

AMBLYSTOMATIDAE.

AMBLYSTOMA Tschudi, 1838, Batr., 57.

Salamandra opaca Gravenh., 1807, Ueb. Zool. Syst., 431.
New Hampshire to Mexico.

S. talpoidea Holbr., 1842, Herp., V, 73, pl. 24.
South Carolina to Louisiana.

S. tigrina Green, 1825, Jour. Phil. Ac., V, 116.
Mississippi valley to New Jersey.

(B) **A. bicolor** Hallow., 1857, Pr. Phil. Ac., 215.
New Jersey.

(C) **A. mavortium** Bd., 1849, Jour. Phil. Ac., I, 292.
Dakota to Mexico.

(D) **A. californiense** Gray, 1853, Pr. Z. S. Lond., 11, pl. 7.
California.

(E) **A. trisruptum** Cope, 1867, Pr. Phil. Ac., 194.
Colorado to New Mexico.

(F) **A. xiphias** Cope, 1867, l. c., 192.
Ohio.

(G) **A. obscurum** (Bd.) Cope, l. c., 192.
Iowa.

Lacerta punctata Linn., 1766, Syst., 370.
Maine to Texas.

A. macrodactylum Bd., 1849, Jour. Phil. Ac., 292.
Oregon.

A. paroticum (Bd.) Cope, 1867, Pr. Phil. Ac., 200.
Oregon; Puget sound.

A. aterrimum Cope, 1867, Pr. Phil. Ac., 201 (s. d.).
Rocky mountains.

A. tenebrosum B. & G., 1852, Pr. Phil. Ac., 174.
Oregon.

A. conspersum Cope, 1859, Pr. Phil. Ac., 123.
Carlisle, Pennsylvania.

Salamandra texana Matthes, 1855, Alg. Deutsch. Nat. Zeit., 266.(?)

S. jeffersonania Green, 1827, Cont. Macl. Lyc., 4.
New England and Canada to Illinois.

(B) **A. laterale** Hallow., 1858, Jour. Phil. Ac., III, 352.
Canada to Wisconsin.

(C) **A. platineum** Cope, 1867, Pr. Phil. Ac., 198.
Ohio.

(D) **A. fuscum** Hallow., 1858, l. c., 355.
Indiana; Virginia.

A. cingulatum Cope, 1867, Pr. Phil. Ac., 205 (s. d.).
South Carolina.

A. microstomum Cope, 1867, l. c., 206.
Louisiana to Ohio.

Gyrinus mexicanus Shaw, 1800, Nat. Misc., 343.
Mexico.

Axolotes maculata Owen, 1844, Ann. Mag., XIV, 23. (?)
Mexico.

DICAMPTODON Strauch, 1870, Mem. Acad. Imp. St. Petersb. (4), XVI, 68.

Triton ensatus Eschsch., 1833, Zool. Atlas, pt. 5, p. 6, pl. 22.
California.

PLETHODONTIDAE.

ANAIDES Bd., 1849, Icon. Encycl., II, 256.

Salamandra lugubris Hallow., 1848, Jour. Phil. Ac. (2), I, 126.
California.

A. ferreus Cope, 1869, Pr. Phil. Ac., 109.
Oregon.

PLETHODON Tschudi, 1838, Batr., 92.

Heredia oregonensis Grd., 1856, Pr. Phil. Ac., 235.
Oregon; California.

P. flavipunctatus Strauch, 1870, Salamand., 71.
California.

Salamandra glutinosa Green, 1818, Jour. Phil. Ac., I, 357.
Louisiana to Wisconsin and east.

P. croceater Cope, 1867, Pr. Phil. Ac., 210.
Fort Tejon, California.

P. intermedius (Bd.) Cope, l. c., 209.
Vancouver's island.

S. erythronota Green., 1818, Jour. Phil. Ac., 356.
Wisconsin to Canada.

(B) **S. cinerea** Green, l. c., 356.
Indiana; Pennsylvania; Canada.

(C) **P. dorsalis** Baird.
Kentucky.

P. iecanus (Cope) Yarrow, 1883, (?).

HEMIDACTYLIUM Tschudi, 1838, Batr., 59, 94.

Salamandra scutata Schleg., 1838, Fauna Japon., Amph., 119.
Canada to Texas.

Salamandrina attenuata Eschsch., 1833, Zool. Atl., pt. V, 1, pl. 21.
California.

H. pacificum Cope, 1865, Pr. Phil. Ac., 195.
California.

Batrachoseps nigriventris Cope, 1869, Pr. Phil. Ac., 98.
California.

GEOTRITON Bonap., 1831, Saggio, 84 (Spelerpes Raf., 1832).

Salamandra rubra Latr., 1802, Rept., IV, 305.
Missouri to Florida.

(B) **Pseudotriton montanus** Bd., 1849, Jour. Phil. Ac. (2), I, 293.
New York to South Carolina.

(C) **Spelerpes stictiCeps** Baird.
Mexico.

Salam. longicauda Green, 1818, Jour. Phil. Ac., I, 351.
Ohio to Georgia.

Sal. guttolineata Holbr., 1842, Herp., V, 29, pl. 7.
Ohio to Georgia.

Sal. bilineata Green, 1818, Jour. Phil. Ac., I, 352.
Florida to Ohio.

Sal. variegata Gray, 1831, Synops., 107.
City of Mexico to Central America.

Spelerp. multiplicatus Cope, 1869, Pr. Phil. Ac., 106.
Arkansas.

S. lineolus Cope, 1865, Pr. Phil. Ac., 197. (?)
Vera Cruz; Orizaba.

S. chiropterus Cope, 1863, Pr. Phil. Ac., 54. (?)
Mexico.

S. cephalicus Cope, 1865, Pr. Phil. Ac., 196.
Mexico.

S. leprosus Cope, Pr. Phil. Ac., 105.
Vera Cruz; Oaxaca; Orizaba.

S. belli Gray, 1859, Batr. Grad., 46.
Mexico.

Oedipus rufescens Cope, 1869, Pr. Phil. Ac., 104.
Vera Cruz.

O. morio Cope, l. c., 103.
Mexico.

Pseudotriton marginatus Hallow., 1856, Pr. Phil. Ac., 130.
Georgia.

Salam. porphyritica Green, 1827, Macl. Lyc., I, 3, pl. 1, f. 2.
Ohio to Massachusetts and Georgia.

Spelerp. laticeps Broc., 1883, Miss. Sci. Mex., Batr., 110, pl. 18, f. 1.
Vera Cruz.

Bolitoglossa mexicana D. & B., 1854, Erp., IX, 93, pl. 104, f. 1.
Mexico.

MANCULUS Cope, 1869, Pr. Phil. Ac., 101.

Salamandra quadrigitata Holbr., 1842, Herp., V, 65, pl. 21.
North Carolina to Florida.

M. remifer Cope, 1869, Rep. Peab. Ac., 84.
Florida.

DESMOGNATHIDAE.

DESMOGNATHUS Bd., 1849, Jour. Phil. Ac. (2), I, 282.

Triturus fuscus Raf., 1820, Ann. of Nat. (Bd.).
New York to Louisiana.

(B) **S. auriculata** Holbr., l. c., 47, pl. 12.
Ohio to Georgia.

Salam. nigra Green, 1818, Jour. Phil. Ac., I, 352.
Illinois to Georgia.

S. quadrimaculata Holbr., 1842, Herp., V, 49, pl. 13.
Florida to New York.

D. ochrophaea Cope, 1859, Pr. Phil. Ac., 124.
New York to Georgia.

THORIUS Cope, 1869, Am. Nat., 222.

T. pennatulus Cope, l. c.
Mexico.

SALAMANDRIDAE.

DIEMYCTYLUS Raf., 1820, Ann. Nat., No. 22.

Triturus (Notophthalmus) miniatus Raf., l. c.
Canada to Texas.

(B) **T. (Diemyctylus) viridescens** Raf., l. c.
Canada to Texas.

Triton torosus Eschsch., 1833, Zool. Atlas, V, 12, pl. 21, f. 15.
Oregon; California.

ECAUDATA.

RANIDAE.

RANA Linn., 1735, Syst., —1758, Syst., I, 210, —1766, Syst., I, 354.

R. catesbeiana Shaw, 1802, Zool., III, 106.
Mississippi valley to the Atlantic.

(B) **R. horiconensis** Holbr., 1842, Herp., IV, 83, pl. 19.
New York; Canada.

R. clamitans Latr., 1801, Rept., II, 157.
New England to Texas.

(B) **R. septentrionalis** Bd., 1854, Pr. Phil. Ac., 61.
Canada to Montana.

R. montezumae Bd., 1854, Pr. Phil. Ac., 61.
City of Mexico.

R. virescens Kalm, 1761, Resa N. Amer., III, 46 (*halecina* auct.).
Mexico; United States and northward.

(B) **R. berlandieri** Bd., 1859, Mex. Bd. Surv., Rept., 27, pl. 26, f. 7–10.
Mississippi valley; Dakota to Mexico.

(C) **R. nigricans** Hallow., 1854, Pr. Phil. Ac., 96.
El Paso creek, California.

(D) **R. areolata** B. & G., 1852, Pr. Phil. Ac., 173.
Texas.

(E) **R. capito** LeC., 1855, Pr. Phil. Ac., 425, pl. 5.
Illinois to Florida.

(F) **R. sinuata** Bd., 1854, Pr. Phil. Ac., 61 (*circulosa* Jord.).
New York to Michigan.

(G) **R. lecontei** B. & G., 1853, Pr. Phil. Ac., 301.

R. palustris LeC., Ann. Lyc. N. Y., I, 282.
Missouri to the Atlantic.

R. silvatica LeC., l. c., 282.
Mississippi valley to Atlantic.

(B) **R. cantabrigensis** Bd., 1854, Pr. Phil. Ac., 61.
Canada to Saskatchewan; New England.

(C) **R. aurora** B. & G., 1852, Pr. Phil. Ac., 174.
California; Oregon.

R. pretiosa B. & G., 1853, Pr. Phil. Ac., 378.
Puget sound.

R. maculata Brocchi, 1876, Bull. Soc. Philom. (7), I, 178.?
Mexico.

R. adtrita Trosch., 1865, Wirbelth. Mex., 82 ?
Mexico.
R. pachyderma Cope ?

ENGYSTOMATIDAE.

ENGYSTOMA Fitz., 1826, Neue Class., 65.
E. carolinense Holbr., 1838, Herp., I, 83, pl. 2.
South Carolina to Missouri and Florida.
E. ustum Cope, 1866, Pr. Phil. Ac., 131.
Mexico.
E. elegans Blgr., 1882, Cat. Batr. Sal., 162.
Cordova, Mexico.
E. rugosum D. & B., 1841, Erp., VIII, 744.
Mexico.

CYSTIGNATHIDAE.

HYLODES Fitz., 1826, Neue Class., 38.
H. ricordii D. & B., 1841, Erp., VIII, 623.
Southern Florida.
Lithodytes latrans Cope, 1878, Amer. Nat., 186 ?
Texas.
Syrrhophus marnockii Cope, l. c., 253. ?
Texas.
H. berkenbuschii Pet., 1869, Mb. Brl. Akad., 879.
Mexico.
Batrachyla longipes Bd., 1859, Mex. Bd. Surv., II, pl. 37.?
California to British America.

BUFONIDAE.

BUFO Laur., 1768, Syst., 25.
Rana lentiginosa Shaw, 1802, Zool., III, 173.
North Carolina to Colorado and Florida.
(B) **B. americanus** (LeC.) Holbr., Herp., V, 17.
Nova Scotia to Dakota, and southward.
(C) **B. fowleri** Putnam, Rep. Peab. Ac.
This is an **americanus** of moderate size and with frontal ridges low, close together, and nearly or quite parallel. Voice peculiar.
Manitoba to Winnipeg; Massachusetts.
(D) **B. cognatus** Say, 1823, Long's Exp., II, 190.
Arkansas; Colorado; Dakota.
(E) **B. frontosus** Cope, 1866, Pr. Phil. Ac., 301.
Colorado; Utah; New Mexico.

(F) **B. dorsalis** Hallow., 1852, Pr. Phil. Ac., 181.
New Mexico.

(G) **B. speciosus** Grd., 1854, Pr. Phil. Ac., 86.
Texas; New Mexico.

(H) **B. microscaphus** Cope, 1866, Pr. Phil. Ac., 301.
Colorado; Utah; California.

(I) **B. pictus** Yarr., 1875, Wheeler's Rept., V, 522.
Utah.

(J) **B. mexicanus** Broc., 1879, Bull. Soc. Philom. (7), III, 23.
Mexico.

B. punctatus B. & G., 1852, Pr. Phil. Ac., 173.
Texas; Mexico; Arizona.

B. debilis Grd., 1854, Pr. Phil. Ac., 87.
Tamaulipas.

B. halophila B. & G., 1853, Pr. Phil. Ac., 301.
California.

B. columbiensis B. & G., 1853, l. c., 378.
Oregon and Washington Territory.

B. valliceps Wiegm., 1833, Isis, 657.
Louisiana to Mexico.

B. compactilis Wiegm., l. c., 661 ?
Texas; Mexico; Peru.

B. dipternus Cope, 1879, Am. Nat., XIII, 437 ?
Montana.

B. monksiae Cope, 1879, Pr. Am. Phil. Soc., 263 ?

B. copeii Yarr. & Hensh., 1878, Rept. & Batr., W. 100 Merid., 4.
Selkirk and James bay, British America.

B. beldingii Yarr., 1882, Pr. U. S. Mus., 441.
La Paz, California.

B. quercicus Holbr., 1842, Herp., V, 13.
North Carolina to Florida.

B. occipitalis Camerano, ———, Atti Ac. Torin, 889, XIV ?
Mexico.

B. bocourti Broc., 1876, Bull. Soc. Philom. (7), I, 186.
Totonicapam, Mexico.

B. argillaceus Cope, 1868, Pr. Phil. Ac., 138 ?
Western Mexico.

HYLIDAE.

CHOROPHILUS Baird, 1854, Pr. Phil. Ac., 60.

Hyla triseriata Wied., 1839, Reise N. Amer., I, 249.
New Jersey; Colorado.

(B) **Helocaetes clarki** Bd., 1854, Pr. Phil. Ac., 60.
Texas.

(C) **C. triseriatus** subspecies *corporalis* Cope, 1875, Check-list ?
New Jersey.

Rana nigrita LeC., 1824, Ann. N. Y. Lyc., I, 282.
South Carolina; Florida.

Cystignathus ornatus Holbr., 1842, Herp., IV, 103, pl. 25.
South Carolina; Georgia.

Hylodes ocularis Holbr., l. c., 137, pl. 35.
South Carolina; Georgia.

C. copii Blgr., 1882, Cat. Bat. Sal., 334.
Georgia.

C. septentrionalis Blgr., l. c., 335, pl. 23, f. 1.
Great Bear lake.

C. verrucosus Cope, 1877, Pr. Am. Phil. Soc., 87 ?
Florida.

ACRIS D. & B., 1841, Erp., VIII, 506.

Rana gryllus LeC., 1824, Ann. N. Y. Lyc., I, 282.
Illinois; North Carolina to Florida.

(B) **A. crepitans** Bd., 1854, Pr. Phil. Ac., 59.
Maine to Dakota and Texas.

(C) **A. achetae** Bd., l. c., 59.
Key West, Florida.

(D) **A. bufonia** Blgr., 1882, Cat. Bat. Sal., 337.
New Orleans.

HYLA Laur., 1768, Rept., 32.

Calamita cinerea Schn., 1799, Amph., 1, 174.
This is the *H. carolinensis* of authors, = the cinereous frog of Pennant, 1792, Arct. Zool., II, 331.
North Carolina to Florida.

(B) **H. semifasciata** Hallow., 1856, Pr. Phil. Ac., 306.
South Carolina; Texas.

H. affinis Bd., 1854, Pr. Phil. Ac., 61. ?
Sonora.

H. gratiosa LeC., 1856, Pr. Phil. Ac., 146, pl. VI.
Georgia; Florida.

H. versicolor LeC., 1824, Ann. Lyc. N. Y., I, 281.
Texas; Wisconsin; Massachusetts.

H. femoralis Daud., 1803, Rainettes, 15, pl. 1, f. 1.
Georgia; Florida.

H. squirella Daud., l. c., pl. 14, f. 3.
South Carolina; Florida.

H. andersoni Bd., 1854, Pr. Phil. Ac., 61.
Maryland; South Carolina.
H. eximia Bd., l. c., 61.
New Mexico; Mexico.
H. regilla B. & G., 1852, Pr. Phil. Ac., 174.
Mexico; Oregon; Nevada.
H. baudinii D. & B., 1841, Erp., VIII, 564.
Texas; Central America.
H. nigropunctata Blgr., 1882, Cat. Batr. Sal., 366.
Cordova; Jalapa; Vera Cruz.
H. crassa Broc., 1876, Bull. Soc. Philom. (7), I, 130.
Mexico.
H. plicata Broc., l. c.
Mexico.
H. cadaverina Cope, 1866, Pr. Phil. Ac., 84 ?
California.
H. arenicolor Cope, l. c.
Utah; Sonora.
H. curta Cope, l. c., 313.
Lower California.
H. miotympanum Cope, 1863, Pr. Phil. Ac., 47 ?
Jalapa, Mexico.
H. gracilipes Cope, 1865, l. c., 195 ?
Northeastern Mexico tableland.
H. bistincta Cope, 1877, Pr. Am. Phil. Soc., 87 ?
Vera Cruz.
Hylodes pickeringii Holbr., 1842, Herp., IV, 135, pl. 34.
Maine; Illinois; South Carolina.

PHYLLOMEDUSA Wagl., 1830, Syst. Amph., 201.
P. dacnicolor Cope, 1864, Pr. Phil. Ac., 181.
Colima.

PELOBATIDAE.

SCAPHIOPUS Holbr., 1838, Herp., I, 85.
S. solitarius Holbr., l. c., 85, pl. 12.
Massachusetts; Florida; Mississippi.
(B) var. **albus** Garman, 1877, Pr. A. A. A. S., Buffalo meeting, 194.
Average size less than that of preceding. Brown of the back lacks the red or chocolate tinge. Readily distinguished by the great amount of white on back, flanks and upper surface of limbs. The white forms spots or vermiculations which coalesce into bands of irregular shape and extent.
Key West, Florida.

S. couchii Bd., 1855, Pr. Phil. Ac., 52.
Texas; Utah; California.

(B) **S. varius** Cope, 1863, Pr. Phil. Ac., 52.
Utah; Lower California.

(C) **S. rectifrenis** Cope, l. c., 52.
Tamaulipas; Coahuila.

S. multiplicatus Cope, l. c.
Mexico.

S. hammondi Bd., 1859, P. R. R. Rep., X, pt. 4. 12, pl. 27, f. 2.
California.

S. bombifrons Cope, 1863, Pr. Phil. Ac., 53.
Missouri; Nebraska; Texas.

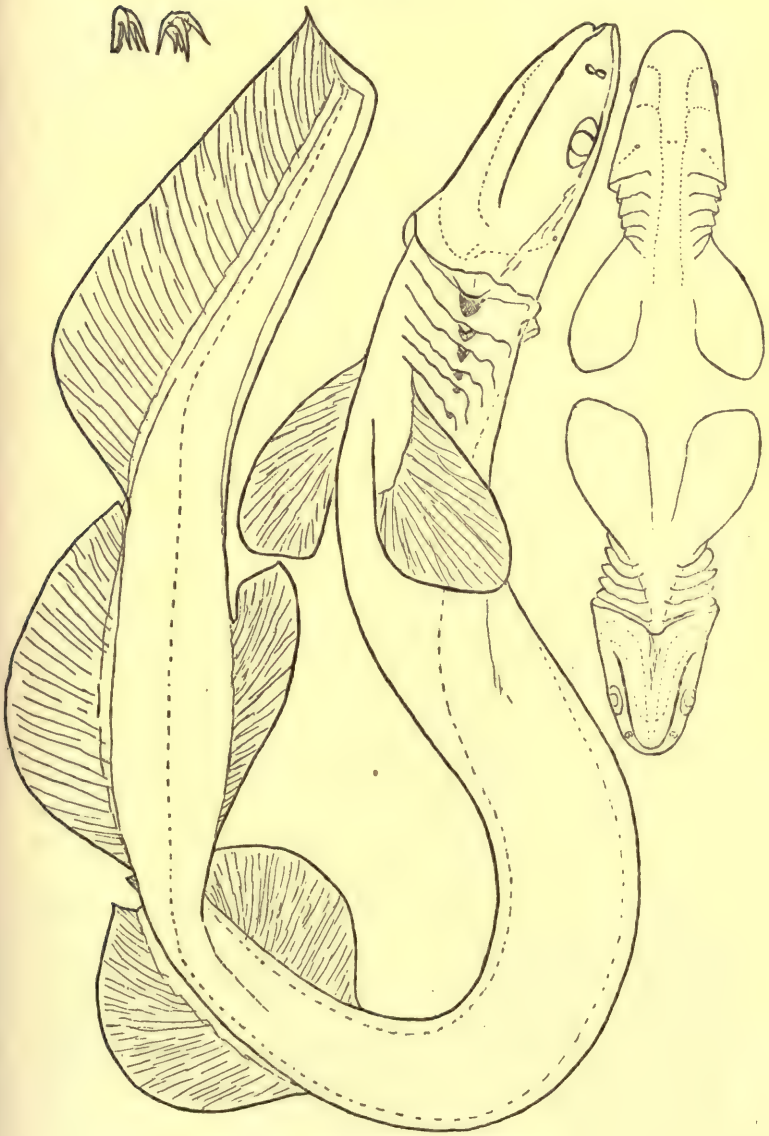
S. dugesi Broc., 1879, Bull. Soc. Philom. (7), III, 23.
Mexico.

Spea stagnalis (Cope) Yarr., 1875, Wheeler's Rep., V, 525, pl. 25, f. 6–8.
New Mexico.

Scaphiop. intermontanus (Cope) Yarr., 1883, Checklist, 26. ?

AN EXTRAORDINARY SHARK.

BY SAMUEL GARMAN.



CHLAMYDOSELACHUS ANGUINEUS.

Measurements.—Total length 59.5; snout to angle of mouth 4.5, to back of skull 4.25, to occipital pores 3.9, to end of gill covers 7., to end of pectorals 14.25, to vent 35.5, to base of ventrals 32., to end of ventrals 38.6, to base of anal 39.75, to end of anal 47.6, to base of dorsal 42.25, to end of dorsal 47.75, to base of caudal 48.5; greatest width across ventrals 7., greatest width across caudal 5., greatest width across dorsal and anal 6.5, greatest circumference of body 11.5, width of head across eyes 3.5, width of teeth between the outer prongs (length of longest prong little less) .25 inches.

Rows of teeth $\frac{14}{13} \cdot \frac{0}{1} \cdot \frac{14}{13}$.

Rays on hyomandibular and ceratohyal (first branchial arch) 22, on second arch 15, third 14, fourth 12, fifth 9, sixth 6, and on the seventh none.

Hab., Japanese seas.

Description. Body very long, slender, eel-like, increasing in size comparatively little anteriorly, compressed near and behind the vent, which is in the posterior half of the total length. Head broad, wider than high. Crown slightly convex forming a rather sharp angle with the snout and sides of the head, from the eyes forward. Skull with an anterior foramen, beginning a short distance in front of a vertical from the front edge of the orbit, resembling that of *Raja*. Behind this, midway between the eyes, there is an elongate depression on the crown as of a second foramen, while on the occiput a little distance in front of the occipital pores a deep rounded depression indicates what is commonly called the second, the posterior foramen. Snout broad, rounded, hardly extending in front of the jaws, rather acute-angled or shovel-shaped at the top. Nostril moderate, vertical, separated by a fold from each side into an upper opening looking forward and a lower one looking backward, situated about midway from eye to end of snout and near the middle of the space from top of head to mouth. Eye moderately large, orbit elongate, near a vertical from the middle of the length of the mouth. Spiracle very small, over the hyomandibular; its distance behind the eye equal to that from eye to

end of snout. Mouth cleft very deep, slightly curved, extending as far back as the skull. Roof and floor of mouth covered with sharp scales, the former curving upward very strongly behind the teeth between the nostrils. Upper and lower jaws about equal in length. Lips without a groove or labial fold. Glossohyal cartilage (basihyal) prominent above the floor of the mouth and free at its extremity about half an inch, forming a tongue. Teeth small, similar in both jaws, several in each row in function at the same time, each with three long, smooth, curved, backward directed, slender, very sharp cusps — each of which bears some resemblance to a serpent's tooth. A small cusp on the base at each side of the central. Bases of teeth broad, extending inward about the length of the cusps, terminating in two prongs (see fig.) which, extending beneath the base of the next tooth, prevent the possibility of reversion or turning the cusps forward. Fourteen rows of teeth on each side on the upper jaws, no median series. A median row on the symphysis of the lower jaws, its teeth similar in size and shape to those of the thirteen rows on each side of it. Hyomandibular and ceratohyal closely and somewhat firmly connected with the jaws at the hinge or hinder angle of the latter. Branchial arches long, very slender, with sharp small scales on their inner edges. Without dissecting, twenty-two branchial rays can be counted on the hyomandibular and ceratohyal (the first arch) and on the succeeding six arches, in order, 15, 14, 12, 9, 6, and 0 respectively. In most cases the outer extremities of the rays are produced in a sharp flexible point beyond the adjacent margin of the gill covers. Gill openings very wide, oblique, the opposite series very narrowly separated on the throat, the fourth in front of a vertical from the pectoral and the fifth and sixth extending back above the shoulder. A broad opercular flap covers the first

branchial aperture and is continuous and free across the isthmus, forming a frill or ruffle; it is held in place and prevented from turning forward by a thin fold or wall of membrane, near an inch in height, attached immediately beneath the middle of the basihyal. The external distribution of slime-canals is about as follows: starting above the nostril in front of the eye a line turns backward along each side of the skull and, after receiving a branch from behind the eye, continues along the middle of each flank to the extreme end of the vertebral column in the tail, where it makes an abrupt turn downward for about a quarter of an inch; under the chin on each side, a line runs along the mandible and curving upward disappears behind the angle of the mouth; a branch of this, beginning nearly on a vertical beneath the middle of the space between eye and nostril, runs farther from the mouth and turning upward near the margin of the opercular flap after receiving a short branch behind the angle of the mouth, continues to a point a very short distance behind the spiracle, a small branch coming into it near the end from the direction of the corner of the mouth. Pectorals moderate, broad, rounded. Dorsal comparatively small, its posterior extremity extending as far back as that of the anal, angle blunt. The upper margin of the dorsal is armed with a series of enlarged, compressed, chisel-shaped scales, which extends forward on the back to a vertical from the vent, a few of the anterior being horizontally flattened. Ventrals large, broad—a little broader than long, rounded, posterior angle acute. Anal broad, long, rounded, acute-angled posteriorly. Caudal long, very broad, rounded anteriorly, posterior angle acute—produced into a filamentary point, margin very thin or membranaceous. Above the muscular vertebral portion of the tail there is a narrow expanse of fin, widening backward, the edge of which is armed by a

sharp series of chisel-shaped scales, and extended downward behind the end of the vertebral column, where it becomes about three-sixteenths of an inch in width. That it is the dorsal portion of the fin which descends is proved by the change in the direction of the points of the scales and of the mucus canal. The dorsal portion of the fin is plainly indicated on the hinder margin of the tail about half-way down to the filamentary point. The chisel-shaped scales are in reality formed from two series (one belonging to each side of the body) which have coalesced. Though small and harsh to the touch the scales on the body are not sharp; they offer about the same resistance from whatever direction the finger may be passed over them. On the tail, however, they are very sharp and the points are directed backward. Along the edges of the canals on both body and tail the scales are compressed and flattened; they form the only cover or protection for these organs, which in the specimen described have the appearance of long seams or grooves. On the skull these canals do not stand open as on the rest of the body. Near the mouth and especially toward its angle the scales are larger and more prominent. Under the middle of the belly, the skin forms two closely approximated rolls or ridges separated by a groove, and inside of these the muscle is thicker than towards the flanks. Intestine very small, valve spiral. Abdominal pores opening behind the vent, protected by a fold. Cartilages soft and flexible as those of *Somniosus* or *Selache*. Uniform brown, darker at the thin margins of the fins. Specimen described, a female, apparently adult, purchased by the Museum of Comparative Zoology from Professor H. A. Ward, who gives Japan as the locality.

The accompanying outlines are taken from the animal as it lies on the belly showing the back of the middle of the

body and the sides of the head and tail. The smaller sketches show the upper and lower surfaces of the head. The smallest figures give the outlines of a tooth viewed from above and from the sides.

From the foregoing it appears that there is neither genus nor family to which the species described may properly be assigned. The characters given below are selected for provisional diagnoses.

CHLAMYDOSELACHUS. Branchial apertures six. Opercular flap broad, free across the isthmus. Teeth similar in both jaws, with slender subconical cusps and broad backward produced bases. No teeth in the middle in front above; a row on the symphysis below. Mouth wide, anterior; no labial fold. No nictitating membrane. Fins broad, pectorals far in advance of the others. Caudal without a notch posteriorly. Gill arches slender, long, basihyal not wide. Intestine small.

CHLAMYDOSELACHIDÆ. Body much elongate, increasing in size very little anteriorly. Head depressed, broad. Eyes lateral, without nictitating membrane. Nasal cavity in skull separate from that of mouth. Mouth anterior. Snout broad, projecting very little. Cusps of teeth resembling teeth of serpents. Spiracles small, behind the head. One dorsal, without spine. Caudal without pit at its root. Opercular flap covering first branchial aperture free across the isthmus. Intestine with spiral valve.

Remarks. Such an animal as that described is very likely to unsettle disbelief in what is popularly called the "sea serpent." Though it could hardly on examination be taken for anything but a shark, its appearance in the forward portion of the body, particularly in the head, brings vividly to mind the triangular heads, deep-cleft mouths, and fierce looks of many of our most dreaded snakes. In view of the possible discoveries of the future, the fact of the existence of such creatures, so recently undiscovered, certainly calls for a suspension of judgment in regard to the non-existence of that oft-appearing but elusive creature, the serpent-like monster of the oceans.

Generally the attitude of ichthyologists in respect to the belief in unknown sea monsters is much the same; they are inclined to accept it but are waiting more definite information. A couple of years ago Professor Baird in a conversation on the subject drew a sketch of a strange creature, captured and thrown away by a fisherman on the coast of Maine, which might be readily considered by the ordinary observer as a form of "the serpent." It was some twenty-four feet in length, ten inches in diameter, eel-like in shape, possessed of a single dorsal placed near the head, and had three gill openings. The question was "is it a shark?" In several respects it resembled an eel rather more. An outline and the correspondence in relation to it have recently been published in the Proceedings of the Fish Commission.

Notwithstanding the possession of peculiarities which prevent its entrance into any of the known families of the order, the subject of the present communication is a veritable shark. A diameter of less than four inches to a length of five feet marks one of the slenderest of the tribe. Whether it attains much greater length we can only judge,

from the structure and apparent age of the specimen, to be probable. The delicate margins and filaments of the fins are those of an inhabitant of the open sea or considerable depths. Bottom feeders are provided with larger spiracles and the fins usually show signs of wear. Rapidity of movement is suggested by the large amount of surface in the posterior fins. It is probable, however, that the large fins, being so far back, are of importance as support for the body when the anterior portion is quickly plunged forward to seize the prey; that is, they secure a fulcrum from which the animal may strike like a snake. The anterior fins (pectorals) being only of moderate size are yet ample for balancing or directing the body when in motion however rapid.

There is a correspondence between the size of the gill openings and that of the mouth; no matter how widely the latter may be opened when rushing upon the prey, the immense branchial apertures allow the water to pass through without obstruction. Favoring the idea of rapidity of movement still further are the peculiarities in the structure of the nostrils. By means of a fold from each side of the vertically elongated nostril it is divided into what appears to be two nasal apertures. Of these the upper looks forward and catches the water as it is met turning it into the cavity upon the membranes of the interior; while the lower opens backward allowing the water to escape after passing over the olfactory apparatus. In case of the upper opening it is the hinder margin that stands out farthest from the head and in the lower aperture it is the forward edge that is prominent. In fact the structure is such that the slightest forward movement will send a current of water in at the upper portion of the nostril and out at the lower while a move backward will simply reverse

the order making the current enter below and escape above. In most Selachians this current is secured by means of the nasal valve, which covers about half of each nostril.

The teeth are constructed for grasping and from their peculiar shape and sharpness it would seem as if nothing that once came within their reach could escape them. Even in the dead specimen the formidable three-pronged teeth make the mouth a troublesome one to explore. Points of teeth in perfect preservation, shape of the cusps, and the structure of the small portion of the intestine left by the captor, leave little room for doubt that the food of the creature was such as possessed comparatively little hardness in the way of the mail or other armature.

No other shark of which we know has the opercular flap free across the throat. In this particular it recalls the fishes. There is a certain embryonic look about the species, as others who have seen it also remark, that calls for a comparison with fossil representatives of the Selachians. Among them I have been unable to find anything which might be considered at all near. In *Cladodus* of the Devonian there is a form with teeth somewhat similar, a median and two lateral cones on each tooth, but the cones are straight instead of curving backward, and the enamel is grooved or folded instead of smooth. However, the type is one which produces the impression that its affinities are to be looked for away back, probably earlier than the Carboniferous, when there was less difference between the sharks and the fishes.

A SPECIES OF HEPTRANCHIAS SUPPOSED TO BE NEW.

BY SAMUEL GARMAN.

HEPTRANCHIAS PECTOROSUS.

Total length 16, snout to caudal 10.375, snout to anal 8.25, snout to dorsal 7.1, snout to vent 6.75, snout to end of pectoral 5, snout to angle of mouth 2, and snout to mouth 0.8 inches.

Hab., Patagonia.

Description. Body elongate, compressed posteriorly, heavy and broad in the anterior third of its length, chest broad. Head broad, short, somewhat depressed, snout and facial angles rounded, blunt. Nostril, anterior, more than half-way from the eye to the end of the snout, in the upper half of the distance between top of head and mouth. Eye moderate, without a nictitating membrane, situated about the middle of the length of the head. Spiracle very small, in front of the upper angle of the first gill opening, half-way to a vertical from the eye. Mouth very large, inferior, with a thin labial fold which extends along the lower jaw nearly half-way to the symphysis. Teeth compressed, unlike in the upper and lower jaws, which both have teeth on the symphysis. Roof and floor of mouth with compressed usually five-cusped scales, like shagreen. The tooth between the series of the upper jaws is sharp pointed, slightly oblique and resembles those on its left, as it is on that side the small notch appears at its base. On each side of this tooth there is a series of seven, the medial of which bears a small cusp at the forward portion of

the base which is followed by a long sharp one and this in turn by one or two smaller ones. Behind the seven, toward the angle of the jaws, there are a number of very small ones. On the lower jaws the teeth are much broader, that on the symphysis is small and bears most of its notches on the left side; on each side of it there is a series of six, each of which has one to two small, followed by four moderate sized, cusps, the anterior of the four being little if any longer than the other three; and, in cases, there is also a small cusp on the posterior portion of the base. As in the upper series there are very small teeth in the hinder portion of the series. Gill openings seven, wide, all in front of the pectoral, the series separated on the throat by a space nearly as wide as that between them back of the head; the width of the openings, and of the spaces between them decreases toward the pectoral. Pectorals nearly as broad as long, angles rounded, posterior margin slightly indented. Width across both ventrals less than their length. The posterior inner portion of each ventral is a strong fold, opening toward the body, and in it is hidden the clasper. Dorsal rather small, beginning above the posterior extremity of the ventral and extending a little beyond a vertical from the middle of the anal, posterior margin indented, lower angle produced, blunt. Anal smaller than the dorsal, beginning under the middle of the length of the latter. Tail long without a pit at the root, armed on the upper edge by three series of enlarged (thickened and broadened) scales. Caudal rather narrow, widest anteriorly. Scales carinate, where they have not been rubbed, with a long sharp central point and, on each side of this, one or two small ones.

Brownish, more or less faintly blotched with darker on back and flanks. Type in Mus. Comp. Zool., Cambridge, Mass.

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PIGEONS AND THE PIGEON FANCY.

BY WM. G. BARTON.

THE pigeon family, in the widest sense, includes a multitude of species, many living in the tropics and displaying the gorgeous colors characteristic of the birds of hot climates. But the wild species of pigeons which inhabit Old and New England are few in number. In the former, we find *four* species, viz.: the Blue Rock Dove, which we shall speak of again, the Ring Dove, which is the commonest wild pigeon of England, the Stock Dove — once considered the stock whence all domestic pigeons — and the Turtle Dove. In New England are *two* species only: the common Wild or Passenger Pigeon, and the Carolina Dove. The beautiful little Collared Turtle Dove, called also Ring Dove and Laughing Dove, common in both countries as a pet, is not to be confounded with these.

Science has turned her scrutinizing eye sharply upon pigeons; and Mr. Darwin took the domestic pigeon for his chief typical illustration of the variability of domestic animals, and made them contribute a surprising

array of facts toward the support of his grand and audacious theories of animal life. His opinion that all the varieties of tame pigeons have descended from one species, finds acceptance I believe with most scientists, although it has not lacked warm contestants, and certainly, to superficial observers, may well appear absurd. Those who are interested in the question should read that one of the several monuments of the great naturalist's patience and concentration, "The Variation of Animals and Plants under Domestication." The wild species assigned this post of honor is the one first mentioned—the Blue Rock Pigeon (*Columba livia*). This bird is very similar in appearance to that variety of our common pigeon which is slaty-blue with two well-defined dark bars across each wing. It is still found in Great Britain, particularly along the rocky shores of Scotland. Wild rock pigeons in other parts of the the world, as in India and Italy, differing somewhat in appearance from the British bird, are classed as the same species. It is interesting to notice how often the light bluish wing with the two bars appears among the fancy breeds. This marking is especially common in the offspring of crosses between two varieties.

The Blue Rock pigeon's nearest brother, and a variety which required neither the cunning interference of man nor long ages to produce, is the common Dove-house pigeon, with which, mingled in some degree with other blood, Salem and other cities are, in the words of a Salem clergyman, "infested." But, if we follow Mr. Darwin, we must also consider as *Columba livia*, birds so mutually diverse as the pouter, the tumbler, and the fantail. Our common pigeon is found all over Europe, and is the kind used in the cruel shooting-matches, which should be prohibited. It is so abundant that the swiftness of its flight and the general beauty of its plumage,

especially in the "iris" of its burnished neck, are apt to escape our notice.

Pigeons have been associated with mankind for uncounted ages. Noah's dove and the frequent references to pigeons in the Scriptures are familiar to us all. The earliest record of the domestic pigeon refers to the Fifth Egyptian Dynasty or 3,000 B. C. But, leaving that out of account, the ode to the carrier by Anacreon, written in the fifth century, B. C., and the complaints of Varro who was born 116 B. C., and of Columella, living about the year 1 A. D., regarding the extravagant prices paid for fancy pigeons by their contemporaries, are allusions to pigeons old enough to make the brownest crumbling document in this building seem a thing of yesterday. And there may be somebody here who, learning that £100 is paid for a pair of carriers at the present day, and that long lists of pigeon genealogy are printed, would shake hands with old Pliny across eighteen centuries, and lament as he did when he said: "Many are mad with the love of these birds; they build towers for them on the tops of their roof, and will relate the high-breeding and ancestry of each, after the ancient fashion. Before Pompey's civil war, L. Axius, a Roman knight, used to sell a single pair of pigeons *denariis quadringentis*." This sum has been estimated £12 18s. 4d.

Among the Orientals, pigeons have always been favorite pets. There are thirty Sanscrit names for them, and half as many Persian. India and China are old pigeon countries. In fact, we believe that all civilized, and many half-civilized, peoples have prized the pigeon. Besides the countries mentioned, there come readily to mind, as associated with this fancy, Egypt, Morocco, Turkey, Austria, Italy, Spain, France, Russia, the United States, and preëminently Germany, Belgium, Holland and Great

Britain. The dove which whispered into the Great Prophet's ear has endeared this bird to Mussulmans; Russians feel at this late day a practical affection toward them because of the service rendered at the Deluge; and the many associations of the dove with Scripture have kept alive a sentiment at least in their favor throughout Christendom. Large numbers are publicly fed every day in the great square of Venice; flocks soar across the smoky sky of London; the streets of St. Petersburg, Cairo, and Constantinople abound in them, tame and fearless. Among the rafters in the dock-sheds of New York City live hundreds of pigeons, protected and cherished by salt and stevedore; and the spillings from the nose-bags of the horses in Boston are devoured by denizens of loft, cornice, and church-tower; while amid the smoke and din of the railway station in Salem doves rear their young.

In feudal days the barons only were allowed to keep pigeons, which they suffered to prey upon the crops of their tenantry, who had no redress. So that, in France especially, we find hard words spoken against the dovecotes — those towers of masonry in which these birds were lodged. These dovecote pigeons were no doubt at first the "blue rocks," which had been captured in their native haunts.

The pigeon fancy must be considered strictly *a fancy*. Many men make it a business, of course, and a pigeon pie is a pleasing incident; but the bald questions "Does it pay?" and "Do you eat them?" are considered almost insulting by the true fancier, and are a sign that the questioner must experience, in respect to this subject, a sort of new birth before he can be enlightened. The fancy, then, is æsthetic, allied to that for roses, dahlias and tulips; and I will venture to assert, that in grace of form, and beauty of color and marking, those flowers have in

pigeons formidable rivals. To the boy the pigeon is a pretty pet; to the man it becomes the object of deep thought, of persevering training, and of patient experiment.

Yes! to the boy, pigeons are the royal pets; and thereafter, the caged squirrel, the penned-up toad, the tethered tortoise, lose their charm. Captives are they — yet at liberty, and such a liberty — not of the earth, but of the heavens. They wander, not to catch grasshoppers in the mowing lot, but to soar with exultant freedom into the skies, still, as their proud owner knows, bound fast to the loft by the ties of home. To the urchin everything winged and hard to catch has especial charms, whether butterfly, bat, or bird. And the craving for possession grows so strong, that the black-barred, blue-checkered, brick-red-checkered, white, or variously pied, common pigeons of our streets and yards are enticed into the noose or under the sieve, if only for the short-lived pleasure of holding in the hand that throbbing form which just now cleaved the air, or of pressing to the cheek or lips the soft wing which has whistled so often overhead. The rapture felt, when the coop is being prepared; when the first live pigeons are owned; at the discovery of the first white egg; or at the return of the birds after their taste and test of liberty,—only those who have felt it know. The speaker recalls the time when, although then opposed as now both from inclination and principle to early rising, he hastened to his loft at five in the morning, where seated on a hard box he spent an hour or two in watching the indoor habits of his pigeons. Sometimes I carried on evening observations by lantern light. Even now, I occasionally see in dreams such ideal pigeons as are figured in the books, and with that light upon their feathers which never was on sea or land.

Pigeons pair, like the singing-birds; but, instead of mating for the season, remain paired year after year, even, as a rule, for life. I say *as a rule* because there are frequent exceptions; and the constancy of the dove has been greatly exaggerated, as they occasionally desert one another to choose more congenial mates, and are by no means *always* faithful to the vows made at billing, even when the partnership is continued. So are their meekness and gentleness largely imaginary. It is, I fear, the soft, plaintive voice of the pigeon that has done much for its reputation. There could scarcely be a more striking illustration of a quarrelsome disposition, prone to pick up a row whenever possible, than is afforded by some cock pigeons. Such a bird will take up his station at the entrance of a loft, and do his best to prevent the passage in or out of any inmate, rushing to and fro with malicious cooing and vicious strokes of his bill. Such a pigeon often takes possession of the whole side of the room, comprising many more nests than he can possibly use, and maintains his position until actually whipped in a free fight with some other cock. A pigeon frequently acts to perfection the dog in the manger, perching upon the food box or the bath solely to keep other pigeons away. This is hardly exceptional, unless in degree. No bird is more jealous of his rights and privileges, and they are all greedy and all will fight — or run. I have watched with some excitement fights over a nesting place, which lasted for many minutes. They approach one another sidewise, holding on high the off wing in a threatening way, and striking with the one next their rival, and also with their beak. It is highly amusing to see two that are about equally matched, in a nesting box, wrestling, each trying to pitch his antagonist out and not to be pitched out himself, so that they turn round and round

or stand as still as a Rogers group, tightly braced with outspread wings and legs. That they are seldom much injured in these fights is only because they are poorly armed. A squab which has tumbled to the floor is not unfrequently terribly lacerated—sometimes even killed by old birds; and a sick pigeon is invariably persecuted with vehement malice. I regret to disturb any long cherished notion in the minds of my hearers, but am thus in the fashion in these iconoclastic times. You will find very much in these birds to compensate for a character often so unlovely; and their habit of generally mating for life, and always very fondly, remains a remarkable fact.

The perpetuation and improvement of existing varieties and the formation of new ones depend upon the fact that pigeons very kindly accept mates chosen by their owners, so that they may be made to mate according to the points possessed by the proposed parents and desired in the offspring. Many pages of tedious detail have been written as to what birds should be mated to produce a given result. As the French in roses, the Dutch in bulb flowers, so, for example, have the Germans shown marvellous skill in the production of variously marked and colored pigeons.

A cock and hen pigeon placed in a cage together, will generally mate in a day or two, unless the hen whip the cock. In which case, a few days sole possession of the cage will commonly furnish him with sufficient courage to bring the hen to submission. Two cock pigeons may mate, when males are too numerous, and, if given eggs, rear young; and females have been known to do the same, each laying two eggs in the nest, on which they sit with amusing patience. The nest is generally the choice of the cock, if not of the fancier. He flies into it, scratches about or crouches perfectly motionless and calls softly, louder and louder, to his mate, peeping out now

and then to see if she responds. Probably she soon flies into the nest, coos softly in reply, and caresses his head gently with her bill in the most affectionate and delicate manner. Perhaps she has brought a stick or straw. But, at any rate, he soon flies off to fetch building material to her, which she arranges with great care, often taking it directly from his beak. These meetings are always accompanied by short, confiding coos. The nests vary greatly. Some pairs work with great industry, and build a toppling dangerous structure; others are content with a dozen sticks, and deposit the eggs upon the bare board or earthen nest pan. Two eggs only are laid, the great fecundity of pigeons depending altogether upon the number of the broods, which among good breeders may amount to ten or eleven a year. For several days before the eggs are laid, the cock follows the hen from place to place, giving her little peace except when she is on the nest. The first egg is laid in the late afternoon, and after two nights and a day have passed, the second one is placed by its side, probably in the forenoon. Then begins incubation in earnest, more and more assiduous as the days go on. In all these matters, the cock takes an affectionate and unaffected interest, perching near by, communicating frequently, and assuming an important share in the labor of incubation. He goes on to the nest in the middle of the forenoon, is cordially welcomed by the hen, who carefully gets off the nest and seeks for food, recreation, and exercise, while he as carefully adjusts himself with an air of great comfort to await his mate's return, which will be in four or five hours. This time may vary slightly, but at night the nest is always occupied by the female. In about eighteen days after the second egg, the "golden couplets are disclosed," thinly covered with a yellow down, blind, and as helpless as young mice or sparrows. Now

we behold a marvel which distinguishes pigeons from other birds, and makes the old joke about pigeon's milk no joke at all. As in mammals the lacteal glands secrete milk at the birth of the young, so, at the hatching of the young pigeons, or rather at the time when they should hatch, the crops of both parents become thickened in structure, and secrete a milky liquid, which coagulates or curdles into something resembling curdled milk; and the young pigeon has his beak taken into the side of that of his parent, and receives this curdy nourishment, ejected by a sort of vomiting, against his wide under mandible. For this, his appetite is excellent, and such remarkable nutritive power does it possess, that squabs grow at a wonderful rate. For a while they are covered closely by the parents, and fed exclusively upon this "soft meat." But in a few days, they are left uncovered longer and longer, and the soft meat becomes mingled with half-digested food; and, after eight or ten days, it disappears altogether, the food being then merely softened by maceration in the crop of the parent. Later on, the old one, after eating heartily, directly swallows a copious draught of water and throws up his whole cropful into the maw of the young one, who is now fully feathered, perhaps flying from roof to roof, or running with outspread wings and a whistling note in pursuit of his father,— for the mother has probably weaned him, and is devoting her whole attention to a second pair of eggs.

Fanciers are in the habit of shifting eggs from one pair to another to afford valuable young the benefit of good nursing, and a large proportion of the highest bred birds are reared by foster-parents of a common sort. Young ones are sometimes given to several different pairs of nurses in succession, so as to be afforded more than one course of soft meat. Pigeons, like infants, may be brought

up by hand, and many a one, deserted after a week or so by his parents, has flourished, first on chewed cracker, then on grain and water (which they soon learn to take deftly from the human mouth); or has been fed literally by hand with soaked peas or corn. A large number of the pigeons sold for food in the London market have been stuffed by professional feeders, who charge a penny a dozen squabs for feeding them with millet or tares and water from their mouth. The crop is blown full in an instant and a whole meal thus given the astonished bird in almost the twinkling of an eye. The increase in weight of a young pigeon is thus given by an English clergyman. It was a young barb, and weighed at hatching one-half oz.

The following are its weights on the respective days:—

6th day	4½ oz.
7th "	5¾ "
9th "	8¼ "
12th "	10 "
18th "	11½ "
20th "	11¾ "
1mo.	12¼ " or a little more

than the mother. In four or five weeks the bird is flying about, and in six months or so is anxious to find a mate of his own.

Pigeons are great bathers, and common ones are often seen squatting in the puddles. During a shower, they sprawl about upon the roof, lying upon the side with one wing uplifted, that the drops may fall beneath it; and they sometimes remain out until completely drenched.

In their manner of drinking they resemble horses, sucking all they wish — a hearty pull — without raising the head, and, when very thirsty, immersing the beak nearly to the eyes.

They are fond of salt, and gather around a bit of salt fish, or peck day after day at the gravel where salt has been shaken from the table cloth.

Their fondness for hemp seed is like the greed of children for candy; and the wildest specimens may generally be quickly tamed by it, and made to eat from the hand and fly upon the head and shoulders of the feeder.

They are as individual as men. I can recall the faces and coos of certain pigeons, and have often recognized one among a flock of thirty by the voice alone. Some are docile, intelligent, less greedy; others pugnacious, stupid, and the very embodiment of selfish gluttony. Some, easily tamed, look trustingly at you; others of the same variety, have the eye of a wild Texas bull and refuse to come near, unless they are sure of hemp seed.

There are very many obstacles to successful pigeon-keeping. Hawks may catch them on the wing; cats bring bloody havoc into the loft, or snap up your choicest darling under your very nose; rats may eat eggs and young; lice in five or six species infest them; or disease ravage like Asiatic cholera. Some refuse to lay, others allow their young to starve. You may be surprised some fine day to find that your best yellow fantail has fallen down a chimney. Several pigeons have tumbled down two different chimneys in my house, and I was once obliged to rise at midnight to remove the fireboard in my chamber and admit a tumbler in this Santa Claus fashion, a *tumbler* indeed.

The homes of pigeons are of every kind, from the soap-box of the ten year old boy, to the elaborately furnished, heated, and daily swept apartments of the wealthy fancier. The best lofts in England, Scotland, and the United States would doubtless greatly surprise most of us by their beauty, costliness, and adaptation.

Many pigeon or columbarian societies, for the promotion of the fancy, exist in this country and in Europe. In London, at the present day, there is the National Peristeronic Society, which consists of one hundred members, and which holds an annual exhibition at the Crystal Palace. Of course there are multitudes of local societies.

The premiums and the notoriety offered by exhibitions afford the special inducements to fanciers to breed for points of excellence. The prizes are awarded by judges; and upon the standards adopted by the society, and the discretion of the judges depends, in some degree, what characteristics shall be demanded in certain varieties. So that, while the general character of a variety remains the same year after year, requirements as to minor points are constantly being modified. This subject sometimes gives rise to controversy.

[In describing the principal varieties of fancy pigeons, the speaker referred to the pictures upon the stage, and was not confined to manuscript. His remarks, somewhat abridged, were as follows.]

The Pouter is, in my opinion, the king of fancy pigeons, although this term has been applied to the carrier. The unsophisticated are apt to call him ugly, and at first sight he does bear a top-heavy look. But when we learn that his huge ball is simply inflated with air, he seems the lighter for it. Pouters are more cosseted and petted than any fancy pigeon. They are made very tame, handled often, stroked upon the back, and taught to "blow," and trip about or "play" as it is called, when addressed by the peculiar call which pouter fanciers utter. He is the most human pigeon, often assuming a nearly erect position, is intelligent, responsive, social, good-natured, comical. One comes to consider him a playful, sly rogue, ready for a frolic. If he does not swell up when

you want him to, it is an easy matter to put his bill into your mouth and blow him up, as a boy does a football. He will retain this air when set down, and strut about with as much satisfaction as if he did it himself. This habit of inflating the crop is in some degree common to all pigeons and affords them unmistakable pleasure, although once in a while the pouter may have a difficulty in discharging the air, perhaps even fall over backwards. They generally fly with much wing clapping and often with their crops fully inflated. When very hungry they are apt to gorge themselves, and all the pigeon books give instructions for hanging up a gorged pouter in a stocking leg. The pouter should be very tall and slender, with long legs that are properly feathered, long wings and tail, and a full round crop. He should be as perfectly marked as possible. There are blue-pied, black-pied, yellow-pied, red-pied, white, and other colors. Indeed most varieties of fancy pigeons are found of different colors. There is a small or "bantam" variety called the "pigmy" pouter. The Scotch are noted for their fine pouters. £300 has been paid for three pairs, and $135 for a yellow-pied hen, and probably even larger prices have been realized. Prices like these are not rare among rich and enthusiastic fanciers, and figures as astonishing may be quoted for all the more important varieties of fancy pigeons.

The Carrier is by many fanciers placed at the very head of the fancy, but it is not a favorite of mine. It has beauty, because it is a pigeon, and is very curious, but requires a high degree of culture to fully appreciate it. One must "be educated up to it," as the old saw-sharpener said to the man who objected to the music of his file. The carrier is now poorly named because, although its ancestors were undoubtedly used for the purpose which the name suggests, this fancy carrier is, by the highly devel-

oped eye and beak wattles, totally unfitted for long flights, its sight being so much obstructed that the best specimens cannot pick up scattered kernels of corn, but must be fed from a box. So the term "Homing Pigeon" or "Homer" has been applied to the actual carrier. The fancy carrier calls for more points of perfection than any other pigeon, and it is stated that twice as much money is annually spent for them as for any other variety. He is not tame nor petted like the pouter, but is naturally wild. He is large, powerful, and bold-looking. His neck should be long, slender but not tapering. His beak-wattles, eye-wattles, beak, head, legs, outline, must approximate to a given standard. His main distinguishing feature is his abnormally large beak-wattle, which looks as if a small cauliflower had been impaled upon his bill.

The Dragoon, often called the "Dragon," resembles the carrier, but has a smaller wattle which grows upon the upper mandible only. He is, I think, a much handsomer bird, being very symmetrical in form. They are good fliers and good nurses.

The Antwerp is a name given to an important variety of "Homing" pigeon, but there is also a sort called the "Show Antwerp," which is a fine bird, with lines to charm a sculptor, but with no very remarkable peculiarity.

The Barb was perhaps named from the country of Barbary. All the "wattled" pigeons are probably of Oriental origin. A Turkish pigeon called the Scandaroon much resembles the carrier. The barb has a broad square head, with a bright red surface of wattle around the eye, and a short, thick, bullfinch beak. It is highly prized, and is, like the foregoing and most of those to follow, of various colors.

The Mahomet is similar to the barb, but has a crest.

The Tumbler is so called because he tumbles; yet some

do not. In fact, tumblers may be divided into two classes: the Flying Tumblers, prized for their aërial performing, and Short-faced Tumblers, which are bred solely for certain peculiarities of appearance, without regard to their manner of flight. Tumbling, strictly speaking, is the turning of one or more complete backward somersaults during flight, so rapidly as not to impede progress, and often during an upward course. Good birds will tumble thirty or forty times a minute, and go over so quickly as to escape the notice of a person not used to watching them. The better spirits they are in, the more they tumble, appearing to take great pleasure in the act. But it is also true that among those called "House Tumblers," which tumble in the loft and are seldom let out, some individuals tumble if they rise a foot from the floor, and seem to dread the action; while occasionally an out-of-door tumbler loses control of himself and falls to the grouud. But the term tumbling does not mean falling, though some poor performers, especially young birds, do drop for some distance instead of going over. There is, however, a variety among tumblers called "Rollers," which drop through the air while rolling rapidly over and over. Collections or "kits" of flying tumblers are carefully trained to fly high in a compact flock. There is no more beautiful sight than a flock of these birds dashing off a roof, tumbling, rolling, and circling about higher and higher until almost or quite lost to sight. These flocks are often started off by flag waving, and called down by a whistle. They will remain aloft for hours, for seven hours even, never going out of sight, unless *upward*.

The Short-faced Tumblers are bred very small and plump, with a round head, and an exceedingly short beak. They are of very many colors, and among them are the Baldheads with a white head, and the Beards with a white

chin. All tumblers have short "faces," but the difference between the coarsest, "mousy," flying-tumbler and the high-bred, delicate, short-face is very great, and there are all grades between. The Almond Tumbler should be of a dark, rich yellow color (difficult to describe—it might be called a very light brown), dotted with small black spots, while the flight and tail feathers should each show distinct marks of yellow, black, and white. Some of the finest specimens remind one of a tulip. The almond birds often have young of other colors, which are used in breeding other almonds.

The Fantail or "Fan" is the best known fancy pigeon. It probably originated in India, and many have been brought home from Calcutta in Salem vessels. Ladies always admire the fantail; and a flock of pure white ones strutting over a lawn, or a collection of various colors, white, black, blue, yellow, red, pied, saddle-backed, feeding in a dense cluster like a bouquet of fine flowers, is worth going some distance to see. The old name for them is Broad-tailed Shaker. The term shaker is on account of the peculiar quivering motion of their necks when they strut. The tail of the common pigeon contains twelve feathers while that of the fantail has been known to carry forty. But erect carriage and symmetry of form are more to be desired than a great number of feathers, and most tails contain only between twenty and thirty.

[Only short notes had been written about the following varieties which were more or less fully described.]

The Frilled Pigeons, with a frill on the breast like a ruffled shirt-front, variously crested or plain-headed, include the following, with many sub-varieties of color, etc.: Turbit, Turbiteen, Satinette, Brunette, Bluette, Blondiette, and Owl.

The Jacobin, or "Jack," is apt to be poor, but when

good, is a most beautiful bird. Its distinguishing feature is an ample hood of colored feathers closely curving over its pretty white head.

The Trumpeter has a "shell" crest, a strange tuft of feathers at the base of the upper mandible, and very heavily feathered legs. He is named for his remarkable, long-continued, very amusing coo.

The Runt is the largest variety. It is bred solely for size. They weigh, per pair, between four and five pounds, and a single runt has weighed two pounds nine ounces.

The pigeons which are usually called "Toy Pigeons," are mostly of German origin. Most of them are included in the following list. It should be remembered that of many of these, there are several sub-varieties of differing colors: Magpie, Nun, Spot, White-spot, Helmet, Swallow or Tern, Fairy, Priest, Brunswick, Starling, Swiss or Crescent, Shield, Letz, Archangel, Ice, Fire, Suabian, Hyacinth, Porcelain, Victoria, Frill-back, Stork, Black-backed Gull.

The following varieties are Oriental: Swift, Lahore or Martin, Burmese or Florentine, Scandaroon, Damascene, Capuchin, Mookee, Goolee, Sherajee.

The Homing Pigeon, or the "carrier pigeon" of *literature*, must be distinguished from the carrier of the *fancy*. Pigeons have undoubtedly been used for many centuries to carry messages, and they are still used for that purpose; but at present, where one is used for carrying a message, thousands are flown in matches for a trial of speed. In considering them, it should be remembered that they fly only *to* their loft, being influenced solely by their desire to get home, and that they accomplish long distances only after a prolonged course of training. In the opinion of most persons who have carefully weighed the facts, their

wonderful feats may be altogether accounted for by their acute eyesight, good memory, and great power of endurance and speed. Cases have been cited which were thought to prove that they possess some mysterious power of divining the way home, but the weight of the evidence is decidedly against this notion. Fog and darkness invariably interfere with their return, and even a light fall of snow, which changes the appearance of the landmarks, has thwarted them. Journeys of three or four miles have been made on moonlight nights; but the offer made by Mr. Tegetmeier of £10 for any pair of pigeons which would fly twenty-five miles on a dark night (although thousands will fly two hundred and fifty miles in a day) was not met. The same gentleman took a pigeon, which had often flown fifty miles, a distance of five miles in a fog, and the bird very wisely remained upon a housetop until the fog cleared away.

The mystery of this homing power is lessened in some degree, when it is considered that a pigeon's power of vision is probably much greater than that of man, and that Mr. Glaisher, from a balloon one-half mile high over London, could see the River Thames all the way from Richmond to the Nore, and when a mile high, the cliffs at Dover seventy miles away. There can be little doubt that the very best-bred pigeon would certainly be lost if taken one hundred miles away for its first flight. Some birds which were twenty hours upon a journey of eighty-three miles flew over the same ground the second time in two. Even old ones, which have flown in races the previous season hundreds of miles in length, are never sent upon the longest journeys without being, in some degree, re-trained that year to refresh their memory.

Dragoons, Tumblers, Owls, and other varieties, have

been used as carriers; but the birds used for this purpose are prized solely for their flying, are generally the product of several judicious crosses, and so are of every variety of color. They must be muscular, close-feathered, with broad overlapping flight-feathers. Probably ninety-nine one-hundredths of the pigeons flown as carriers look much like common pigeons, being somewhat larger and stronger, stouter in build and beak, and having a sharp, intelligent look. When a pigeon, destined to be a homer, is two or three months old, he is taken a half mile or a mile away from his home and allowed to fly back. Then he is taken two miles, then say four, eight, sixteen and, perhaps, by this time ten, twenty, or thirty miles farther at each stage. Many birds are lost while being trained, thus carrying out the principle of the survival of the fittest.

A most remarkable opportunity for the use of carrier pigeons was afforded by the siege of Paris. Pigeons whose home was in that unfortunate city were sent out in balloons and subsequently loosed to make their way back as bearers of valuable official and private despatches. By paying a high rate of postage any person could send a message to a friend in Paris limited to a certain number of words. A very large number of despatches were set up in type, making a page as large as that of a newspaper. This was reproduced on a much reduced scale by photography upon a small piece of paper. One such piece, which was probably a fair sample, measured one and one-fourth inches by two and one-fourth, and contained two hundred and twenty-six despatches, the postage on which aggregated £100. This scrap of paper was placed within a bit of quill, which was securely attached to the shaft of one of the tail feathers of the appointed messenger. If the brave little pigeon safely ran the gauntlet of hawks, storms, fog, and German

sharpshooters, upon its arrival the despatches were interpreted with a microscope, distributed, or publicly displayed.

During the siege, sixty-four balloons came out of Paris containing ninety-one persons and three hundred and sixty three pigeons. Of the pigeons, only seventy-three found their way back; a few of them, however, two or three times, while one bird made six trips. A pigeon which was captured by the Germans and sent by Prince Frederick Charles to his mother, upon escaping from her loft after four years' confinement, returned to its Parisian home. Is it to be wondered at that the governments of France and Germany at the present time breed and keep in training great flocks of homing pigeons as a military measure?

Pigeon *racing* is now practised to some extent in this country. The English are moderately fond of it, but the headquarters for this sport is Belgium. Pigeon-flying is there the national sport. The King favors it and the government subsidizes it. There are said to be more of these pigeons in Belgium than there are inhabitants, or over 5,000,000. Every town, every village, has its society, and flights of three, four, and five hundred miles are common. Upon a single day there were sent 200,000 pigeons from Belgium into France, all to be liberated in races or for training. Sometimes the wonderful sight is afforded of 2000 or 3000 pigeons being liberated together. They are shipped in willow panniers or baskets, each containing about thirty. On Saturday, May 11, 1878, two special trains of seventy-three cars left Belgium for different stations in France, carrying 1740 hampers containing about 70,000 pigeons to be liberated the following day, Sunday. And, upon Sunday, May 19, 125,000 pigeons were loosed, 24,000 in one French city alone.

The races are generally flown under the direction of a

society. The distance from the starting point to each owner's loft is determined, and on the eve of the race, the birds, marked with their owners' name or number, are sent to the rooms of a committee, and there again marked with a cipher unknown to the owners. They are sent by rail with attendants to the starting point. When they are released the time is carefully taken, and various means are adopted to ascertain and verify the time of each bird's arrival at its home. In regard to the speed of these birds, Tegetmeier maintains that they can fly at the rate of three miles a minute. A pigeon has been known to make a journey in eight hours at an average speed of forty-five miles an hour. A French writer chose from the official reports of 300 great races the times of twenty-one birds, the circumstances of whose flight were particularly favorable for his purpose. The slowest of these, according to his estimate, flew 867 yards per minute, the three next to the fastest about 1440 yards, the very fastest 1780 yards. The journey of the latter occupied four and three fourths hours. A mile a minute for nearly five hours! Even this speed is greatly exceeded in short flights.

In 1865, thirty birds were flown from Liverpool to Ghent, 300 miles; they were liberated at 5.30 A. M., the first arriving at 5.50 that evening, after twelve hours and twenty minutes, averaging twenty-five miles an hour. Eight returned the same day; eight never returned.

In 1868, 1507 birds were liberated, July 18, 5 A. M. at Agen, about 500 miles from Brussels. The prizes, including those offered by the king, amounted to 19,000 francs. The following morning at 6.04, the first pigeon arrived, and the 216th came in at 10.30 the day after.

The longest race ever flown was from Rome to Belgium in 1868. 200 pigeons were liberated on July 22, at 4.30

A. M. All of them had flown home from the south of France but none had ever been farther. No bird reached home that month, nor on the first of Aug., nor the second, but on the third there arrived, at a town near Liege, the first messenger from the Eternal City, at 1.55 in the afternoon. If this pigeon had flown in a straight line, it must have crossed the Apennines and the Alps at an altitude of at least 7000 feet; but it is thought probable that it kept to the west of these mountains, skirting the coast and entering France by the way of Nice. The second bird came in on the same day at evening; the third, the day following, Aug. 4; the fourth, Aug. 6; the fifth and sixth, Aug. 10; seventh, Aug. 11; eighth, Aug. 12; ninth, Aug. 18, nearly a month after starting; and the tenth on Sept. 11, to Maestricht. Of the 200 birds liberated, 180 never returned.

The following facts, selected from a mass of material, may be interesting. Mr. Van Opstal, a Belgian, living in New York City, writes me that the longest distance flown in the United States is about 725 miles. The pigeon which performed this feat was owned in Cleveland, O., and was bred from a pair imported from Brussels. A Newark bird has flown about 700 miles, but the time occupied was about four weeks. In the summer of 1883, pigeons flew from Columbus, O., and arrived home at Newark, N. J., 460 miles away, on the same day they were liberated. Mr. Van Opstal writes that a distance of more than 550 or 600 miles seems to be too much for homing pigeons, from one to six weeks being spent in accomplishing that distance, and 75 per cent of the pigeons getting lost; while they often return 500 to 525 miles in a single day, and only 12 per cent get lost. They have flown from Steubenville, O., over the Alleghanies to

N. Y. City, 350 miles, in eight hours. A homer called Jupiter had a record substantially as follows:

Hatched in Antwerp	Aug. 1874.
Brought to America	Jan. 1875.
Philadelphia to New York	1875.
" " " " (silver cup)	1876.
Chester, Pa. to N. Y. (1st prize)	1877.
Elkton, Md. to N. Y.	"
Baltimore to N. Y.	"
Newark, N. J. to N. Y. (1st prize among 69)	1878.
Tamaqua, Pa. to N. Y. (1st " " 40)	"
Sunbury, Pa. to N. Y. (1st " " 28)	"

This bird afterward won first prize from Altoona, Pa., 235 miles, and third prize from Steubenville, O., 355 miles.

In a sale of Homing Pigeons in Brussels in 1877, No. 4 on the catalogue sold for 170 francs.

It had flown from—

Valencienne,	50 miles.	Several prizes.
Arras,	100 "	" "
Orleans,	280 "	A prize.
Chateauroux,	325 "	" "
Langon,	600 "	(in 1876) 6th prize among 2000.
Lectoure,	600 "	201st prize among 2468.

Such is the wonderful travelling these birds perform.

In closing, let me say, that to any one of you, whether lady, gentleman, or child, in search of a hobby, I can heartily recommend the Pigeon Fancy. You may keep pigeons merely as delightful pets, breed them for prize points, or fly them as tumblers or racers.

ANNUAL MEETING, Monday, May 19, 1884.

The annual meeting this evening at 7.30 o'clock: The President in the chair. Records of the last annual meeting were read and approved.

The reports of the Secretary, Treasurer, Auditor, Librarian and the Curators and Committees were read and duly accepted, and ordered to be placed upon file.

The committee on nominations reported the following list of officers, which was duly elected.

PRESIDENT:

HENRY WHEATLAND.

VICE-PRESIDENTS:

Abner C. Goodell, Jr. — Daniel B. Hagar.
Frederick W. Putnam. — Robert S. Rantoul.

SECRETARY: George M. Whipple.

TREASURER: George D. Phippen.

AUDITOR: Richard C. Manning.

LIBRARIAN: William P. Upham.

CURATORS:

History—Henry F. Waters.
Manuscripts—William P. Upham.
Archæology—Frederick W. Putnam.
Numismatics—Matthew A. Stickney.
Geology—B. F. McDaniel.
Botany—George D. Phippen.
Zoölogy—Edward S. Morse.
Horticulture—John E. Peabody.
Music—Joshua Phippen, Jr.
Painting & Sculpture—T. F. Hunt.
Technology—Edwin C. Bolles.

COMMITTEES:

Finance:

The President, *Chairman ex off.*

Henry M. Brooks. Geo. R. Emmerton. David Pingree.

The Treasurer, *ex off.*

Library:

Charles W. Palfray. Henry F. King. William Neilson.
William D. Northend. Theodore M. Osborne.

The Librarian, *ex off.*

Publication:

EDWARD S. ATWOOD. ABNER C. GOODELL, JR. EDWIN C. BOLLES.
B. F. MCDANIEL. H. F. WATERS. JAMES A. EMMERTON. T. F. HUNT.

Lecture:

ROBERT S. RANTOUL. FREDERICK W. PUTNAM. AMOS H. JOHNSON.
FIELDER ISRAEL. ARTHUR L. HUNTINGTON.

Field Meeting:

The SECRETARY, *Chairman ex off.*

GEORGE A. PERKINS, Salem.
GEORGE COGSWELL, Bradford.
FRANCIS H. APPLETON, Peabody.
NATHANIEL A. HORTON, Salem.
EDWARD S. MORSE, Salem.
GEORGE D. PHIPPEN, Salem.
FRANK R. KIMBALL, Salem.
EBEN N. WALTON, Salem.
WINFIELD S. NEVINS, Salem.
JOHN H. SEARS, Salem.

THE RETROSPECT OF THE YEAR

compiled from the several reports read at the meeting, and the remarks of several members in relation thereto, presents the work of the Institute in its various departments since the last annual meeting.

MEMBERS.—Changes occur in the list of our associates by the addition of new names and the withdrawal of some by resignation, removal from the county or vicinity, or by death.

We have received information of the death, during the year, of twenty-four persons, who have been resident members.

GARDINER LEONARD CHANDLER, son of Gardiner L. and Lucretia C. (Green) Chandler, born in Boston, 9 April, 1806; artist; died in Salem, 27 May, 1883. Admitted a member 4 May, 1859.

CHARLES TIMOTHY BROOKS, son of Timothy and Mary (Mason) Brooks; born in Salem June 20, 1813; graduated at Harvard College in 1832, Harvard Theological

School in 1835; pastor of the Unitarian Church at Newport, R. I., from 1838 to 1871; died at Newport, 12 June, 1883. Admitted a member 12 Oct., 1859.

Ernest Bruno de Gersdorff, son of Ernest von Gersdorff, a judge of the court of Saxe Weimar; born in Elsenach, Germany, 18 July, 1820; graduated in medicine at Leipsic, 1846, and immediately came to this country, residing at Bethlehem, Penn.; then Andover; in 1849, Salem; in 1865, he removed to Boston; a physician; died at Pleasantville, N. Y., 28 June, 1883. Admitted a member 4 May, 1853.

Charles Cotesworth Beaman, son of Ephraim and Rebecca (Greenleaf) Beaman; born in Boston, 12 Aug., 1799; in early life engaged in business pursuits; then entered Andover Theological Seminary, and graduated in 1837; pastor of the Howard Street Church in Salem from 1857–1864, having previously occupied other pulpits; died in Boston, 4 July, 1883. Admitted a member 28 Jan'y, 1858.

Horace Brown, son of Haydn and Harriet (Emery) Brown; born at West Newbury, 31 Aug., 1851; graduated at Harvard College, 1872, the Harvard Law School in 1874; lawyer in Salem; died at West Newbury, 5 July, 1883. Admitted a member 5 April, 1875.

Samuel H. Nichols, son of Samuel H. and Sarah (Burdett) Nichols; born at Wakefield, N. H., 31 Jan'y, 1830; clerk; died in Salem, 9 July, 1883. Admitted a member 22 July, 1868.

John M. Ives, son of William and Mary (Bradshaw) Ives; born in Salem, 8 July, 1799. In early life he was in the book business, and at the same time kept a circulating library; afterwards interested in horticultural pursuits; died in Salem, 29 July, 1883. An original member.

Stephen Bradshaw Ives, a brother of the preceding; born in Salem, 12 April, 1801; known for many years as a bookbinder and bookseller under the firm of W. & S. B. Ives; established the Salem Observer in 1823; died 31 July, 1883. Admitted a member 15 Feb., 1852.

William Sewall Cleveland, son of William and Mary (Hiller) Cleveland; born in Lancaster, 28 Feb., 1810; bookkeeper, secretary of the Commercial Insurance Company, treasurer of the Salem Turnpike and Chelsea Bridge Corporation, etc.; was for a long time a clerk with Charles S. Nichols & Co.; died in Salem, 3 Aug., 1883. An original member.

William Hunt, son of William and Mary (Dean) Hunt; born in Salem, 25 April, 1804; a merchant, and with the late Robert Brookhouse was largely engaged in the west coast of Africa trade; died at Salem, 3 Aug., 1883. Admitted a member 25 Jan'y, 1854.

Thomas S. Jewett, son of Thomas and Lucy (Pinder) Jewett; born in Ipswich, 18 Jan'y, 1812; came to Salem when a boy and learned the carpenter's trade; followed this trade for many years; the past twenty-three years one of the assessors of Salem; died 13 Aug., 1883. Admitted a member 28 Jan'y, 1856.

William Leavitt, son of Joshua and Eunice (Richardson) Leavitt; born in Hingham, 15 April, 1801; came to Salem with his parents in 1801; in early life a clerk or salesman in a hardware store, afterwards a teacher in the grammar schools of Salem; many years an instructor in navigation and bookkeeping; interested in the local history of Salem and has compiled several communications for the Historical Collections of the Essex Institute; died at Salem, 3 Sept., 1883. Admitted a member 25 Nov., 1863.

JAMES C. STIMPSON, son of Thaddeus and Hannah (Cook) Stimpson; born at Salem, 9 July, 1799; one of the oldest tanners in Salem, and was for many years prominent in the leather business; for several years a member of the City Government, either in the Council or Board of Aldermen, and also for many years a director of the First National Bank. Died 11 Sept., 1883. Admitted a member 28 July, 1864.

ENOCH K. NOYES, son of Enoch and Sarah Noyes; born at West Newbury, 11 Nov., 1820; a trader in Salem; died 11 Sept., 1883. Admitted a member 26 Aug., 1857.

JOSEPH SHATSWELL, son of Moses and Sarah (Lord) Shatswell; born in Ipswich, 2 Sept., 1801; merchant in Salem; for many years engaged in the West India trade; died 2 Oct., 1883. Admitted a member 20 Dec., 1854.

PETER SILVER, son of James and Susanna (Howard) Silver; born in Salem, 2 Nov., 1811; in early life a master mariner, afterwards a retired merchant; died in Salem, 6 Oct., 1883. Admitted a member 6 July, 1864.

BENJAMIN OSGOOD PEIRCE, son of Benjamin and Rebecca (Orne) Peirce; born in Beverly, 26 Sept., 1812; and died there 12 Nov., 1883; graduated at Colby University, 1835; a teacher in several colleges and academies; since 1849 engaged in business pursuits. Admitted a member 19 July, 1880.

JOSEPH W. CHAMBERLAIN, son of John and Mary (Silver) Chamberlain; born in Salem, 25 Nov., 1830; druggist in Salem; died 10 Dec., 1883. Admitted a member 21 Sept., 1859.

HENRY W. PERKINS, son of Henry W. and Dolly (Webb) Perkins; born in Salem, 1 March, 1832; cashier

of the Mount Vernon National Bank, Boston; died in Salem, 19 Jan., 1884. Admitted a member 16 Dec., 1873.

William C. C. Moulton, son of Hiram and Mary (Batchelder) Moulton; born in Newport, Vt., 14 Oct., 1839; a trader in Salem; died 17 Jan'y, 1884. Admitted a member 14 July, 1864.

Stephen Bradshaw Ives, son of Stephen Bradshaw and Mary (Perkins) Ives; born in Salem, 8 March, 1827; graduated at Harvard College in 1848; admitted to Essex Bar in 1851. He did not hold many official positions, but was a celebrated and well-known advocate in the courts of the state; died at Salem, 8 Feb., 1884. Admitted a member 4 Jan'y, 1854.

James Moore Caller, son of John and Mary (Southwick) Caller; born in Pleasant Valley, N. Y., 11 Jan'y, 1813; came to South Danvers at an early age; for many years was largely engaged in the leather business as a tanner and currier; died in Salem, 13 Feb., 1884. Admitted a member 30 March, 1859.

John Archer, son of Jonathan and Rachel (Woodman) Archer; born in Salem, 4 July, 1796; in early life went to sea, and was privateering in the war of 1812–15; after the peace had a ship chandlery store on Derby street; for many years retired from active business; died 5 Mar., 1884. Admitted a member 26 May, 1858.

Otis Phillips Lord, son of Nathaniel and Eunice (Kimball) Lord; born in Ipswich, 11 July, 1812; graduated at Amherst College, 1832; admitted to the Essex Bar, Dec., 1835; practised in Ipswich until 1844, when he removed to Salem where he has since resided; Associate Justice of the Superior Court from 1859 to 1875, and Associate Justice of the Supreme Court from 1875

to Dec., 1882, when he resigned in consequence of failing health; died 13 March, 1884. Admitted a member 5 Oct., 1874.

FIELD MEETINGS. Five meetings have been held as follows:

First, on Tuesday, June 12, 1883, at "Oak Dell," South Georgetown, situated in a very delightful part of the county. Delegations from Georgetown, Groveland, Boxford, Topsfield and West Newbury joined those from Salem and its vicinity. After a ramble in the forenoon, and the lunch, the meeting was called to order, the president in the chair. Mrs. C. M. S. Horner, of Georgetown, spoke of the "Flora," Rev. Messrs. McDaniel, of Salem, and Alcott, of Boxford, on "Mineralogy and Geology," Messrs. Sidney Perley, of Boxford, and Henry M. Nelson, of Georgetown, on "Historical Matters of Local Interest;" there were also remarks from Messrs. M. W. Bartlett, of West Newbury, B. F. Stevens, of Boxford, and others.

Second, on Friday, June 29, 1883, at Dodge's Mill in Rowley, owned by Mr. Ignatius Dodge. The speakers at the afternoon session held in the old mill, where comfortable seats were improvised, were Messrs. John H. Sears, F. W. Putnam, John Robinson, Alfred Osgood and N. A. Horton. The remarks were mainly on archæological subjects, especially those of Messrs. Putnam, Robinson and Osgood.

Third, on Thursday, July 26, 1883, at Linebrook Parish, a rural country village in the western part of Ipswich. The afternoon session was held in the church. Mr. John H. Sears gave an account of the "Flora," Messrs. M. V. B. Perley and Sidney Perley spoke on "Historical Mat-

ters;" there were also remarks from Rev. B. F. McDaniel, Messrs. J. J. H. Gregory, A. C. Perkins, N. A. Horton, and others.

Fourth, on Wednesday, Aug. 15, 1883, at Balch's Grove, Groveland, by invitation of the Groveland Flower Mission. At the afternoon session, Miss Harriet E. Paine spoke on "The Plants of the Vicinity," Dr. George B. Loring on "Forestry;" there were also remarks from N. A. Horton and Dr. G. Cogswell.

Fifth, on Wednesday, Sept. 19, 1883, at West Peabody, by invitation of the Farmers' Club of that place. The forenoon was spent in visiting the farms of Messrs. Henry Saltonstall, and F. H. Appleton, and other places of interest. At the afternoon session, the speakers were Messrs. J. H. Sears, George Dixon, W. P. Upham, J. H. Ingraham, Willard Spaulding, James P. King and J. S. Kingsley.

MEETINGS.—Regular meetings occur on the first and third Monday evenings of each month. Special and adjourned meetings occasionally. At these meetings papers have been presented by the following persons and referred to the publication committee:

Edward A. Silsbee, on "Criticism of Poetry."

William G. Barton, on "Pigeons and the Pigeon Fancy.[1]"

Rev. B. F. McDaniel, on "The Literature and History of Bells."

J. Ritchie, jr., and *Charles Toppan*, on "A New Process of Bleaching."

F. L. Capen, on "Catastrophic Planetary Tidal Action of the Globe."

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[1] Bulletin, Essex Inst., Vol. XVI, p. 59.

Samuel Garman, on "The North American Reptiles and Batrachians, a list of the species occurring north of the Isthmus of Tehuantepec, with references.[2]"

Samuel Garman, on "An Extraordinary Shark (*Chlamydoselachus anguineus*)."[3]

Samuel Garman, on "A Species of Heptranchias supposed to be New."[4]

John H. Sears, on "Weeds of Essex County."[5]

F. W. Putnam, on "The First Notice of the Pine Grove or the Forest River Shellheap."[6]

Herbert B. Adams, on "The Great Pastures of Salem."[7]

J. A. Emmerton, on "Dr. Bentley's East Parish Deaths; some Notes and Corrections."[8]

Wellington Pool, "Inscriptions from Gravestones in the Old Burying Ground in Wenham."[9]

Leverett Saltonstall, "Memoir of Oliver Carlton."[10]

John T. Moulton, "Inscriptions from the Old Burying Ground in Lynn."[11]

Memorial of C. T. Brooks: "Birth and Boyhood," by E. B. Willson[12]; "His Life at Newport," by Charles W. Wendte[13]; "Letter from W. P. Andrews[14];" Remarks of R. S. Rantoul.[15]

Luke Brooks, "Genealogical Notes Respecting Henry Brooks and Some of his Descendants."[16]

Edward S. Atwood, "Memoir of John Bertram."[17]

LECTURES.—A course of seven lectures, under the di-

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[2] Bulletin, Essex Inst., Vol. XVI, p. 3. [3] Bulletin, Essex Inst., Vol. XVI, p. 47. [4] Bulletin, Essex Inst., Vol. XVI, p. 56. [5] Bulletin, Essex Inst., Vol. XV, p. 93. [6] Bulletin, Essex Inst., Vol. XV, p. 85. [7] Hist. Coll., Essex Inst., Vol. XX. p. 161. [8] Hist. Coll., Essex Inst., Vol. XX, p. 209. [9] Hist. Coll., Essex Inst., Vol. XX, pp. 232 and 297. [10] Hist. Coll., Essex Inst., Vol. XX, p. 241. [11] Hist. Coll., Essex Inst., Vol. XX, p. 273. [12] Hist. Coll., Essex Inst., Vol. XXI, p. 1. [13] Hist. Coll., Essex Inst., Vol. XXI, p. 13. [14] Bulletin, Essex Inst., Vol. XV, p. 81. [15] Bulletin, Essex Inst., Vol. XV, p. 78. [16] Hist. Coll., Essex Inst., Vol. XXI, p. 24. [17] Hist. Coll., Essex Inst., Vol. XXI, p. 81.

rection of the lecture committee, has been delivered as follows: *First*, Alban Andren, of Beverly, "Sweden by a Swede," Wednesday, Nov. 28, 1883. *Second*, Ephraim Emerton, "Martin Luther," Wednesday, Dec. 19, 1883. *Third*, Arthur M. Knapp, "Greek Art," Wednesday, Jan'y 9, 1884. *Fourth*, George M. Towle, "Carlyle," Wednesday, Jan'y 30, 1884. *Fifth*, George B. Loring, "Nathaniel Hawthorne," Wednesday, Feb. 6, 1884. *Sixth*, George M. Towle, "Charles Dickens," Wednesday, Feb. 13, 1884. *Seventh*, Edward S. Morse, "First Impressions of China," Wednesday, March 5, 1884.

In addition to the above, the following lectures have been delivered in the rooms of the Institute.

George H. Hosmer, "Martin Luther," illustrated, Saturday, Nov. 10, 1883.

Matthew Arnold, Friday, Nov. 30, 1883, "Science and Literature."

Raymond Lee Newcomb, Tuesday, Dec. 4, 1883, "The Story of the Jeannette."

John G. Wood, "Whales," Monday, Dec. 10, 1883.

J. C. Welwood, "On the Rhine" (illustrated), Thursday, Jan'y 10, 1884.

John G. Wood, a course of four afternoon lectures: "Ants of the Temperate Zone," Friday, Feb. 15, 1884; "Ants of the Tropic Zone," Tuesday, Feb. 19; "Pond and Stream," Thursday, Feb. 21; "The Horse," Tuesday, Feb. 26.

Alban Andren, "An Evening in Sweden," Tuesday, March 18, 1884.

Morton Prince, "On the Anatomy and Physiology of the Vocal Organs," Monday, April 7, 1884.

PUBLICATIONS have been issued as heretofore. The exchange list, with few exceptions, continues the same as last year.

LIBRARY.—The additions to the Library for the year (May, 1883 to May, 1884) have been as follows:

By Donation.

Folios,	11
Quartos,	68
Octavos,	827
Duodecimos,	519
Sexdecimos,	98
Octodecimos,	25
Total of bound volumes,	1,548
Pamphlets and serials,	6,407
Total of donations,	7,955

By Exchange.

Folios,	11
Quartos,	68
Octavos,	827
Duodecimos,	519
Total of bound volumes,	526
Pamphlets and serials,	2,492
Total of exchanges,	3,018
Total of donations,	7,955
Total of exchanges,	3,018
Total of additions,	10,973

Of the total number of pamphlets and serials, 2,722 were pamphlets, and 6,177 were serials.

The donations to the Library for the year have been received from one hundred and seventy-eight individuals and fifty departments of the General and State Governments and Societies. The exchanges from three individuals, and from one hundred and sixty-three societies and incorporate institutions of which ninety-six are foreign; also from editors and publishers.

The annual examination of the Library has been made. Of the thirteen volumes that were missing last year, ten

have been returned; seven others are now missing from their places.

Donations or exchanges have been received from the following:

	Vols	Pam.
Adelaide, Royal Society of South Australia,		2
Agassiz, Alexander, Cambridge,		1
Allen, Nathaniel T., West Newton,		1
Almy, James F.,	26	22
Almy, S. H.,	1	4
Alnwick, Eng., Berwickshire Naturalists' Club,		1
American Association for the Advancement of Science,	2	
American Library Association,		1
American Ornithologists' Union,		1
Ames, George L.,		18
Ames, Sons of Oakes,	2	
Amherst College Library,	1	1
Amiens, Société Linnéenne du Nord de la France,	1	13
Anagnos, M., So. Boston,		1
Andover, Theological Seminary Library,		1
Andrews, Charles H.,		2
Andrews, Mrs. James H.,		1
Andrews, William P.,		50
Appleton, F. H., Peabody,		1
Archæological Institute of America,		1
Auckland, N. Z., Auckland Institute, Newspapers, Maps,	31	24
Augsburg, Naturhistorischer Verein,		1
Baltimore, Maryland Historical Society,	2	
Baltimore, Md., Johns Hopkins University,		15
Baltimore, Md., Peabody Institute,		1
Bancroft, Rev. C. F. P., Andover,		1
Barnes, George William, San Diego, Cal.,		1
Barton, Edmund M., Worcester,	1	
Bassett, Samuel, Chelsea,	1	
Batavia, Natuurkundige Vereeniging in Nederlandsch India,	1	
Belfast, Naturalists' Field Club,		2
Bell, Charles H., Exeter, N. H.,	1	
Bergen, Bergens Museum,	1	
Berlin, Gesellschaft Naturforschender Freunde,		1
Berlin, Verein zur Beförderung des Gartenbaues,		12
Bern, Naturforschende Gesellschaft,		1

	Vols.	Pam.
Bolles, Rev. E. C., D.D.,	2	138
Bologna, Accademia delle Scienze,		1
Bonn, Naturhistorischer Verein,	2	
Bordeaux, Académie des Sciences, Belles-Lettres et Arts,	3	4
Boston, American Academy of Arts and Sciences,	1	1
Boston, Appalachian Mountain Club,		3
Boston Art Club,		1
Boston, Board of Health,		12
Boston, Bostonian Society,		1
Boston, City of,	4	
Boston, City Hospital,	1	
Boston, Massachusetts General Hospital,		1
Boston, Massachusetts Historical Society,	1	
Boston, Massachusetts Horticultural Society,		1
Boston, Massachusetts Medical Society,		1
Boston, National Association of Wool Manufacturers,		3
Boston, New England Historic Genealogical Society,	1	5
Boston, Overseers of the Poor,	1	
Boston Public Library,		4
Boston Society of Natural History,		21
Boston, State Board of Health, Lunacy and Charity,	2	
Boston, State Library of Massachusetts,	18	1
Boston Zoölogical Society,		3
Boutwell, F. M., Groton,		1
Bradlee, Rev. C. D., Boston,		1
Braunschweig, Archiv für Anthropologie,	1	1
Bremen, Naturwissenschaftlicher Verein,		1
Bristol, Eng., Naturalists' Society,		2
Brooklyn, N. Y., Brooklyn Library,		2
Brooklyn, N. Y., Long Island Historical Society,		1
Brooks, Mrs. Henry M.,		Newspapers,
Brown, Henry A.,	145	573
Browne, A. G., Jr., New York, N. Y.,		3
Brünn, Naturforschender Verein,	1	3
Brunswick, Me., Bowdoin College Library,		9
Bruxelles, Académie Royale des Sciences, des Lettres et des Beaux Arts de Belgique,	9	
Bruxelles, Société Belge de Microscopie,	1	10
Bruxelles, Société Entomologique de Belgique,	2	
Bruxelles, Société Royale de Malacologique,	1	12
Buenos Aires, Sociedad Cientifica Argentina,	1	11
Buffalo, N. Y., American Society of Microscopists,		1
Buffalo, N. Y., Historical Society,		2

	Vols.	Pam.
Buffalo, N. Y., Society of Natural Sciences,		1
Caen, Académie des Sciences, Arts et Belles-Lettres,	1	
Calcutta, Geological Survey of India,	2	16
Cambridge, Harvard University Library,		3
Cambridge, Museum of Comparative Zoölogy,		11
Cambridge, Nuttall Ornithological Club,		3
Carpenter, Rev. C. C., Mt. Vernon, N. H.,		1
Cassel, Verein für Naturkunde,		1
Chamberlain, James, Maps,	26	58
Chauncy, Elihu, New York, N. Y.,	1	
Chicago, Ill., Historical Society,	2	1
Chicago, Ill., Inter Ocean Publishing Company,		1
Chicago, Ill., Public Library,		1
Chilovi, D., Firenze, Italy,		1
Christiania, K. Norske Universitet,	1	4
Christiania, Norské Gradmaalingskommission,		1
Christiania, Videnskabs-Selskabet,	1	
Cincinnati, O., Historical and Philosophical Society,		1
Cincinnati, O., Mechanics' Institute,		1
Cincinnati, O., Society of Natural History,		4
Clarke, George K., Needham,		1
Cleveland, O., Western Reserve Historical Society,		3
Cleveland, Mrs. William S.,	1	85
Coffin, C. C., Boston,		1
Cogswell, W. F., Beverly, N. J.,		3
Cole, Mrs. N. D., Newspapers,		99
Conant, F. O., Portland, Me., Chart of the Conant Family,		
Conant, W. P., Washington, D. C.,	2	1
Copenhague, Société R. des Antiquaires du Nord,		7
Crowell, Rev. E. P., D.D., Amherst,	1	1
Cutter, Abram E., Charlestown,		1
Danzig, Naturforschende Gesellschaft,	1	
Darling, C. W., Utica, N. Y.,		2
Darmstadt, Verein für Erdkunde,	1	
Davis, Joseph, Lynn,	1	
Delisle, M. Leopold, Paris,		1
Dement, Henry D., Springfield, Ill.,	1	
Dodge, James H., Boston,	1	
Doolittle, Miss E., Troy, N. Y.,		1
Dresden, Naturwissenschaftliche Gesellschaft, Isis,		2
Dresden, Verein für Erdkunde,		1
Dublin, Royal Irish Academy,		7
Dublin, Royal Society,	2	5

	Vols.	Pam.
Du Rieu, Dr. W. N., Leide,		1
Eagleston, John H.,	1	
Edinburgh, Royal Society,		1
Eddy, R. H., Boston,		1
Emden, Naturforschende Gesellschaft,		1
Emerton, James,		33
Emmerton, James A., Newspapers,	1	45
Epping Forest and County of Essex Naturalists' Field Club,		1
Erlangen, Physikalisch-medicinische Societät,		1
Exeter, N. H., Phillips Academy,	1	2
Falmouth, Eng., Royal Cornwall Polytechnic Society,	1	
Farley, Mrs. M. C.,	58	101
Fewkes, J. Walter, Cambridge,		1
Flanders, Rev. G. T., D.D., New Bedford,		1
Fogg, Miss Ellen M.,	12	1
Foote & Horton, Newspapers,		
Frankfurt, a. m., Senckenbergische Naturforschende Gesellschaft,		5
Freiburg, Naturforschende Gesellschaft,	1	
Gates, Beman, Marietta, O.,		1
Genève, Société de Physique et d'Histoire Naturelle,	1	
Giessen, Oberhessische Gesellschaft für Natur u. Heilkunde,	1	
Gillis, James A.,	1	59
Glasgow, Natural History Society,		1
Goodell, A. C., Jr.,		9
Goodwin, D., Jr., Chicago, Ill.,		1
Göttingen, K. Gesellschaft der Wissenschaften,	1	
Gould, John H., Topsfield, Newspapers,		25
Green, Samuel A., Boston,	127	426
Gregory, J. J. H., Marblehead, Newspapers,	11	12
Güstrow, Verein der Freunde der Naturgeschichte in Mecklenburg,	1	1
Hale, Josiah L., Brookline,	3	1
Halle, a. S., Naturwissenschaftlicher Verein für Sachsen u. Thüringen,		11
Hamilton, R. I., Narragansett Historical Publishing Company,		4
Hannover, Gesellschaft für Mikroskopie,		1
Hannover, Naturhistorische Gesellschaft,		1
Hapgood, H. L., Athol,		4
Harlem, Société Hollandaise des Sciences,		4
Hart, Charles Henry, Philadelphia, Pa.,		2

	Vols.	Pam.
Hartford, Conn., Trinity College,		1
Hassam, John T., Boston,		1
Hazen, Rev. Henry A., Boston,	1	
Herford, Rev. Brooke, Boston,	1	
Hewitt, Abram S., New York, N. Y., for the late Peter Cooper,	1	
Hill, B. D., Newspapers,		17
Hill, William M.,		1
Hitchcock, Edward, Amherst,		3
Hobart Town, Government of Tasmania,	1	
Hobart Town, Royal Society of Tasmania,		1
Hodges, Mrs. Elizabeth, Estate of the late,	86	3
Holmes, J. C., Detroit, Mich.,	1	2
Honeycomb, Mrs. T. P.,		21
Hunt, T. F.,	31	223
Illinois Department of Agriculture,	1	7
Iowa City, Ia., State Historical Society,	60	5
Israel, Rev. Fielder, Newspapers,	9	51
Ithaca, N. Y., Cornell University,		1
James, Joseph F., Cincinnati, O.,		1
James, U. P., Cincinnati, O.,		2
Johnson, Emery S.,		1
Joy, Walter H.,		1
Kimball, Mrs. James,	1	
Kingsley, J. S., Malden,		7
Kjöbenhavn, Botanisk Förening,		3
Kjöbenhavn, K. D. Videnskabernes Selskab,		3
Königsberg, Physikalisch-ökonomische Gesellschaft,		2
Langworthy, Rev. I. P., Boston,		1
Lansing, Mich., State Library,	13	14
Lausanne, Société Vaudoise,		1
Lawrence, Public Library Trustees,	1	
Lee, Francis H.,		191
Lee, William, Boston,	2	
Le Mans, Société d'Agriculture, Sciences et Arts de la Sarthe,		2
Lisboa, Academia Real das Sciencias,		10
Liverpool, Eng., Literary and Philosophical Society,	3	
London, Eng., Royal Society,		6
Loring, George B.,	1	
Lowell, Old Residents' Historical Association,		1
Lyon, Société d'Agriculture,	1	
Lyon, Société Linnéenne,	1	

	Vols.	Pam.
Mack, Miss Esther C.,	6	199
Madison, Wis., State Historical Society,	63	2
Madison, Wis., Superintendent of Public Property,	2	
Madrid, Sociedad Española de Historia Natural,		3
Mannheim, Verein für Naturkunde,		1
Manning, F. H., Boston,		1
Manning, Robert,		846
Marburg, Gesellschaft zur Beförderung der Gesammten Naturwissenschaften,		2
McDaniel, Rev. B. F., Newspapers,		50
McDanolds, James S., Trenton, N. J.,	3	
Meek, Henry M.,	1	
Merrill, George S., Lawrence,		1
Merrill, W. Jr., West Newbury,		1
Metz, Société d'Histoire Naturelle,		1
Mexico, Museo Nacional,		3
Miller, Lewis F.,		1
Montreal, Natural History Society,		2
Moulton, John T., Lynn,		1
München, K. B. Akademie der Wissenschaften,		10
Münster, Provinzial Verein für Wissenschaft u. Kunst,		1
Napoli, R. Accademia delle Scienze Fisiche e Matematiche,	6	46
Neuchâtel, Société des Sciences Naturelles,	1	
Nevins, W. S., Newspapers,		13
Newark, New Jersey Historical Society,	1	2
New Haven, Conn., Yale College Library,		4
Newlands, John A. R., London, Eng.,	1	
Newport, R. I., Natural History Society,		1
New York Academy of Sciences,		7
New York, American Geographical Society,		4
New York, American Museum of Natural History,		2
New York, Genealogical and Biographical Society,		5
New York, Historical Publication Company,		1
New York, Historical Society,	2	
New York, Mercantile Library Association,		4
Northampton, Smith College,		1
Norwegian North Atlantic Expedition,		1
Nourse, Miss Dorcas C., Newspapers,		22
Odell, Charles,		28
Oliver, Henry K.,		24
Orne, A. C., Marblehead,	1	
Osgood, Alfred, Newburyport,	1	

	Vols.	Pam.
Osgood, John C.,		2
Ottawa, Geological and Natural History Survey of Canada, Maps,	1	
Palfray, Charles W.,	3	66
Paris, Institution Ethnographique,	1	
Paris, Société d'Acclimation,		11
Paris, Société d'Anthropologie,		6
Paris, Société des Etudes Historiques,	1	1
Peabody Institute,		1
Peabody, John P.,	2	
Peet, Rev. S. D., Clinton, Wis.,		4
Peirce, Henry B., Boston,	11	
Perkins, A. C., Exeter, N. H.,		1
Perkins, George A.,		24
Perkins, J. McC., Boston,		2
Perley, Jonathan,	14	1
Perry, Rev. William Stevens, Davenport, Ia.,		1
Philadelphia, American Philosophical Society,		2
Philadelphia, Library Company,		2
Philadelphia, Historical Society of Pennsylvania,	8	161
Philadelphia, Mercantile Library Company,		3
Philadelphia, Numismatic and Antiquarian Society,		1
Phillips, Henry, Jr., Philadelphia,	1	1
Plumer, Miss Mary N.,		5
Pollard, Samuel S., Boston,	136	680
Pool, Wellington, Wenham,		2
Poole, W. F., Chicago,		1
Porter, Rev. Aaron, Mendon,		1
Pratt, Henry J.,		2
Preble, George H., Brookline,		2
Preston, Charles P., Danvers,		1
Providence, Rhode Island Historical Society,	1	2
Providence, R. I., Public Library,		16
Pumpelly, Raphael, Newport, R. I., Maps,		
Putnam, Rev. A. P., Brooklyn, N. Y.,		1
Putnam, Mrs. Eben,		16
Putnam, Mrs. Esther O., Cambridge,		1
Putnam, F. W., Cambridge,		5
Quebec, Laval Université,		1
Quill, D. W.,		1
Ramsay, Alexander, London, Eng.,		1
Ranck, G. W., Lexington, Ky.,		1
Rantoul, R. S.,	9	37

	Vols.	Pam.
Regensburg, K. B. Botanische Gesellschaft,	1	
Regensburg, Zoologisch-mineralogischer Verein,		1
Richardson, F. P.,	2	4
Richmond, Virginia Historical Society,	1	
Riga, Naturforschender Verein,		1
Rio de Janeiro, Museu Nacional,	2	1
Roberts, Mrs. J. K.,	4	
Robinson, E. P., Saugus, Newspapers,		
Robinson, John,		208
Robinson, Mrs. John,		113
Ropes, Rev. W. L., Andover,	1	
Russell, Mrs. Thomas B.,		1
Salem Fraternity,	12	2
Salem, Peabody Academy of Science, Newspapers, Maps,	5	245
Saltonstall, Leverett, Boston, Newspapers, Maps,	558	349
Sampson, Davenport & Co., Boston,	18	
San Francisco, California Academy of Sciences,		1
San Francisco, Cal., Mercantile Library Association,		1
Secomb, Daniel F., Concord, N. H.,	1	
S'Gravenhage, Nederlandsche Entomologische Vereeniging,		4
Shufeldt, R. W., New Orleans, La.,		1
Sibley, Miss A. M.,	2	
Silliman, B., New Haven, Conn.,	3	
Sims, William, Topeka, Kan.,	1	
Skinner, John B.,	4	
Slocum, Charles E., Defiance, O.,	1	
Smiley, C. W., Washington, D. C.,	5	
Smith, George Plumer, Philadelphia, Pa.,	5	2
Smithmeyer, J. L., Washington, D. C.,		1
Smucker, Isaac, Newark, O.,		1
Soule & Bugbee, Boston,	8	23
Springfield, Mo., Drury College Library,	105	69
Stettin, Entomologischer Verein,	1	
St. Gallen, St. Gallische Naturwissenschaftliche Gesellschaft,	1	
Stickney, George A. D.,		9
Stickney, M. A.,	1	
St. John, New Brunswick Natural History Society,		2
St. Louis, Mo., Public School Library,		1
Stockholm, Entomologiska Föreningen,		3
Stoddard, Mrs. Frances Mary, Roxbury,	1	
Stone, Eben F., Washington, D. C.,	16	132

	Vols.	Pam.
Stone, Rev. Edwin M., Providence, R. I.,		1
Stone, Miss Mary H.,		126
Stone, Robert, Newspapers,		
Story, Miss E. A.,	1	1
St. Paul, Minnesota Historical Society,		1
St. Pétersbourg, Académie Impériale des Sciences,		15
St. Pétersbourg, Jardin Impérial de Botanique,		2
St. Pétersbourg, Societas Entomologica Rossica,	1	
Taunton, Eng., Somersetshire Archæological and Natural History Society,	1	
Terre Haute, Ind., Rose Polytechnic Institute,		1
Throndhjem, K. N. Videnskabers Selskabs,		1
Tokio, University of,		1
Topeka, Kan., State Historical Society, Newspapers,		
Toronto, Canadian Institute,		20
Tuckerman, Mrs. J. F.,	2	
Tuckerman, L. S., Maps,		512
Twyman, Joseph, Chicago, Ill.,		11
Unknown,	4	8
Upsal, Société Royale des Antiquaires du Nord,		1
U. S. Bureau of Education,	1	9
U. S. Chief of Engineers,	1	
U. S. Chief Signal Officer,		6
U. S. Coast and Geodetic Survey,	2	
U. S. Department of Agriculture,	1	4
U. S. Department of the Interior,	65	
U. S. Department of State,	2	8
U. S. Fish Commission,	2	
U. S. Geological Survey,	3	1
U. S. Life Saving Service,	1	
U. S. National Museum,		34
U. S. Naval Observatory,	1	
U. S. Patent Office,	7	54
U. S. Treasury Department,	1	
U. S. War Department,	4	
Ward, James W., Buffalo, N. Y.,		1
Waring, Geo. E., Jr., Newport, R. I.,		2
Washington, D. C., Anthropological Society,	1	
Washington, D. C., Smithsonian Institution,	7	
Waters, E. Stanley, Newspapers,		
Waters, J. Linton, Newspapers,	2	18
Waterston, Rev. R. C., Boston,	1	
Waterville, Me., Colby University Library,		16

	Vols.	Pam.
Webber, Charles H.,		1
West, Mrs. George, Newspapers,	6	13
Wheatland, Henry,		35
Wheatland, Miss Martha G.,		3
Wheatland, Philip D., Boston,		1
Wheildon, William W., Concord,		3
Whipple, G. M.,	29	16
Whitcher, Mary, Shaker Village, N. H.,		12
Whiteley, John, Shirley Village,	2	16
Whitney, Mrs. H. M., Lawrence, Newspapers,		
Whitney, J. L., Concord,		3
Wien, K. K. Zoologisch-botanische Gesellschaft,	1	1
Wiesbaden, Nassauischer Verein für Naturkunde,		1
Wilder, Marshall P., Boston,	1	1
Wildes, Rev. George D., Riverdale, N. Y.,		1
Wilkes-Barré, Wyoming Historical and Geological Society,	127	40
Williamstown, Williams College,		2
Willson, Rev. E. B.,	12	78
Winnipeg, Manitoba Historical and Scientific Society,		6
Winsor, Justin, Cambridge,		32
Worcester, American Antiquarian Society,		2
Worcester, Free Institute,		1
Worcester, Society of Antiquity,		3
Worcester, Society of Natural History,		1
Würzburg, Physikalisch-medicinische Gesellschaft,	1	1
Zincken, C. F., Leipzig,		1

The following have been received from editors or publishers:—

American Journal of Science.
Bay State Monthly.
Cape Ann Bulletin.
Chicago Journal of Commerce.
Danvers Mirror.
Essex County Statesman.
European Mail.
Fireside Favorite.
Gardener's Monthly and Horticulturist.
Ipswich Chronicle.
La Bibliophilie.
Lawrence American.
Lynn Bee.
Manifesto.
Mansill's Signal.
Marblehead Messenger.
Medical Register.
Musical Herald.
Musical Record.
Musical Review.
Nation.
Naturalist's Leisure Hour and Monthly Bulletin.

Nature.
Newton Transcript.
Our Dumb Animals.
Peabody Press.
Quaritch's Catalogue.
Sailors' Magazine and Seamen's Friend.
Salem Evening News.
Salem Gazette.
Salem Observer.
Salem Register.
Stove and Hardware Reporter.
Turner's Public Spirit.
West Newbury Era.
Zoologischer Anzeiger.

THE ART EXHIBITION opened on Wednesday evening, May 23, 1883, the seventh under the auspices of the Institute. These exhibitions of Essex County work have an increasing interest for those who watch them carefully from year to year, as an indication of a growth of art feeling in the community, and of the development of talent whose beginnings we have seen, as well as of the appearance of new aspirants whose early endeavors are full of interest and sometimes of decided promise.

The electric light was put into the hall for the first time, and enabled the visitors in the evening to see the collection to much better advantage than heretofore. Some excellent photographs were made of a portion of the exhibit with this light.

There were on exhibition, from one hundred and forty-four contributors, four hundred and eight specimens in the various departments of art. The arrangement was very effective, and the hall attractive.

The following is the list of contributors:

Miss Delia Sheldon, Beverly.
" Ida Caller.
John and Henry Benson.
Mrs. Sara K. Hart.
Miss E. A. Welch, Georgetown.
Mr. Arthur W. Dow, Ipswich.
Miss Edith B. Pickering.
" Edith Rantoul.
Mr. David H. Barry, Marblehead.
Mr. Albert I. Whipple.
Mrs. A. P. Newhall, Lynn.
Miss C. B. Crossman, Swampscott.
Miss S. Ellen Pratt.
" L. L. A. Very.

Miss A. D. Crain.
Mr. E. D. Jones.
Miss S. E. Ober, Beverly.
" E. Philbrick.
" A. G. Endicott.
" Helen Philbrick.
Mr. Sydney P. Guild, Lynn.
Miss H. M. King.
" E. B. Gardner.
" I. S. Jackson.
Mrs. J. H. Langmaid.
" W. H. A. Putnam.
" K. T. Woods.
Mr. J. Mackintire.
Miss Vinnie Browne.
" B. P. Smith.
Mrs. J. C. Abbott.
Miss Carrie Goldthwaite.
" T. R. Nason.
Geo. W. Harvey, Gloucester.
Arthur L. Toppan.
Mrs. M. A. Bovie.
Miss S. S. Kimball.
" M. E. Standley.
J. Appleton Brown, Boston.
Frank M. Cone.
N. B. Cone.
Mr. Joseph Ropes.
Miss Mary L. King.
" M. M. Brooks.
Master Henry Whipple.
" Frank Frye.
" Harry Putnam.
" Richard Ives.
" John G. More.
" Beverly Rantoul.
Miss M. Dixie, Marblehead.
" B. Darling.
" Nellie Flint.
" E. E. Grush.
" M. A. Bigelow.
" Lizzie Brooks.
Mrs. Charles Sewall.
Miss Grace R. Sewall.
Mrs. Geo. Harrington.
Mr. E. C. Larrabee.
" F. B. Choate.
Mrs. M. W. C. Thayer.
Miss S. E. Brown.
" Ruth S. Mugford, W. Peabody.
Miss A. G. Pingree.
Mr. J. J. Redmond.
Mrs. George Upton.
" Helen F. Jacobs, Peabody.
Miss Edith B. Dalton.
" M. W. Nichols.
" K. Peirson.
" A. L. Peirson.
" A. F. Williams.
Mrs. W. A. Smith.
Miss M. L. Hill.
" Kate Dodge.
" Abby Streeter.
Mrs. G. L. Streeter.
Miss Kate Pond.
" Minnie Pond.
Mrs. F. W. Tuttle.
Miss Alice D. Perkins.
" E. W. Fiske.
" Lizzie R. Pickering.
" M. O. Barrett.
" Lucy B. Hood.
" Annie Symonds, Peabody.
Mr. F. Powers.
Miss Agnes L. Babcock.
" C. F. Chase.
" Maggie Bolles.
" H. L. Kimball.
Mrs. Chas. E. Symonds.
" Chas. N. Symonds.
Miss Mary Robinson.
" Beatrice E. Symonds.
Mrs. C. P. Sears, Danvers.
" Damon.
Miss Annie Agge.
" Mary E. Phippen.
" Alice S. Batchelder.

Miss A. M. Quinby.
" H. McMullen.
Mrs. J. H. Roberts.
" N. A. Frye.
Miss Caroline P. Lummus, Peabody.
Mrs. E. R. Bigelow.
Miss Myra Hall.
" C. A. Fabens.
Mrs. Jos. Symonds.
Frank W. Benson.
Annie W. Poole.
Miss M. M. Farley.
" A. M. Osborne.
" H. Frances Osborne.
" Miranda Swan.
" C. H. Sweetser.
" A. F. Perkins.
" L. C. Symonds.
Mrs. H. H. Davis.
Miss Lucy P. Robinson.
Mrs. J. Robinson.
Miss E. W. Chadwick,
" A. L. Chadwick.
" A. D. Varney.
" A. S. Tukey.
Mr. C. H. Lefavour.
Mrs. S. B. Ives, jr.
Miss Eva Farndale.
" Rose Farndale.
" Bessie Putnam.
Mrs. E. V. Emilio.
Miss Nellie B. Nowland.
" M. K. Stevens.
" A. B. Holden.
E. B. Stewart, Lynn.
Miss Louisa Lander.
" Alice Osborne.
" S. E. Smith.
Mrs. Mary W. Whitney, Lawrence.
Mrs. R. C. Manning.
Miss A. B. Hunt.
Mr. C. F. Whitney.

HORTICULTURAL.—The trustees of the Essex Agricultural Society, having accepted the invitation of the authorities and citizens of Salem to hold their annual Cattle Show and Fair at the "Willows" in Salem, on Tuesday and Wednesday, Sept. 25 and 26, 1883, the Institute deemed it advisable to suspend all operations in that direction and to cordially unite with the trustees of the Agricultural Society in making their undertaking a success.

An account of the exhibition will be found in the "Transactions" of that Society for the year 1883.

MUSEUM. The specimens in natural history, including those in archæology, which have been given during the year, are on deposit with the Trustees of the Peabody Academy of Science, in accordance with previous arrangements. Those of an historical character or which possess an artistic interest have been placed in the rooms.

The following may be specified as contributors:

Edwin R. Ide.
Leverett S. Tuckerman.
Edward S. Morse.
Edward S. & Henry Huntington Nelson.
Charles W. Palfray.
George G. Putnam.
T. F. Hunt.
John C. Osgood.
Peabody Academy of Science.
William Reith.
Charles Odell.
Capt. Henry F. King.
Miss Dorcas C. Nourse.
Charles H. Webber.
Rev. Fielder Israel.
Rev. B. F. McDaniel.
Peter Coffee.
George M. Whipple.
Miss F. L. Prescott.
Miss C. A. Hurlburt.
Rev. George B. Jewett.
Mrs. John Robinson.
Ezekiel Goss.
Daniel Henderson.
Moses S. Prime.
B. D. Hill.
Philip D. Wheatland.
Eben N. Walton.
Tenn. Historical Society.
John Larcom.
William Chambers.
Henry A. Brown,
Miss Caroline L. Bayley.
Lemuel B. Hatch.
Frank T. Mooney.
J. Coward.
H. M. Batchelder.
John Davis.

Among the additions to the cabinets during the year, a very interesting historical relic has been received, the inkstand of Wordsworth. A brief account of the manner in which it came into our possession may not be devoid of interest. In August last a letter was received from Mrs. Sarah N. (Pope) Dixon, formerly of Salem, now a resident of Darlington, Eng., dated Aug. 14, 1883, giving an account of her recent visit to Ambleside, in the Lake district, and of a pleasant call at "Stock-Ghyll Force or Falls," the residence of Mr. J. Coward, "who exhibited an inkstand, being the one used by Wordsworth. He said that he had many offers for it, but he would not sell, but would give it to some society or museum. Immediately I spoke a word for the Essex Institute, and he gave his word that he would give it." Ambleside was the home of Wordsworth from 1813 till his death April 23, 1850; the locality teems with memorials of him; there is

scarcely a crag, a knoll, or a rill which he has not celebrated in verse. On Jan'y 25, 1884, a letter was received from Capt. W. T. Hill of the barque "Venice," dated Charleston, S. C., Jan'y 21, 1884, stating that he had, on board, the inkstand of Wordsworth that was put into his hands by Mr. J. Coward, with the request to deliver the same to the Essex Institute; he intended to visit this section on his arrival, but was obliged to return to Liverpool and accordingly sent it by mail. It was duly received in good condition.

The Institute is under deep obligations to Mrs. Dixon, the suggester, to Mr. Coward the donor, and to Capt. Hill the transporter, a worthy trio by whose combined efforts this interesting relic of a well-known and much admired poet of old England has found its way to Plummer Hall, where it will long remain an object of interest to all who delight to study the literature of our fatherland.

FINANCIAL.—The Treasurer's Report of the receipts and expenditures of the past year (condensed for printing).

RECEIPTS.

Balance of last year's account		$54 64
INCOME OF *General Account*		
Assessments of Members	$884 00	
Publications	575 36	
Lectures, Excursions, Hall, etc.	524 77	
Dividend	40 21	
Salem Athenæum, Proportion of Expense	204 26	
		$2228 60
Income of *Historical Fund*		44 00
" " *Nat. Hist. Soc. Fund*		36 00
" " *Davis Fund*		392 16
" " *Ditmore Fund*		180 40
" " *Manuscript Fund*		24 94
" " *Ladies' Fair Fund*		60 00
" " *Derby Fund*		28 72
" " *Howes Fund*		1430 00
" " *Story Fund*		563 00
Loan on Note of Corporation		400 00
		$5,442 46

EXPENDITURES.

PAID ON *General Account*		
Salaries	$1832 00	
Publications	1081 80	
Fuel and Gas	257 79	
Binding, Printing, Books and Stationery	401 81	
Repairs, Express, Postage, etc.	125 75	
Salem Athenæum, Rent and Labor	350 00	
		$4049 15
Paid on Historical Account		56 26
" " Nat. History "		56 25
" " Ditmore Fund Annuity		110 00
Interest on Manuscript Fund funded in Savings Bank		24 94
" " Derby Fund funded in Savings Bank		28 72
" " Davis Fund funded at Savings Bank		12 16
" " Story Fund, paid to Legatee		563 00
Paid Note $500 and interest		541 04
Balance on hand		94
		$5,442 46
The invested funds are now		$45,832 60

Examined and approved by the Auditor, May 19, 1884.

The Secretary in concluding his report, says:

The urgent need of room for the shelving and arrangement of donations to the Library and the Museum, forces itself upon the attention of the officers of the Institute daily. In some of the cases books are already piled three deep, and valuable gifts to the Museum are stored away in drawers and other places, practically valueless to visitors for the purposes of examination. During the past year the matter of increased accommodations has been once more agitated, and plans for an addition to the present building have been laid before some of the officers of the Salem Athenæum and of the Institute for their informal consideration. The lack of funds to carry out these improvements appears to be the only reason for delaying a movement in this direction. Thirty thousand dollars, it is believed, would give ample room to both the Athenæum and the Institute. Some relief must be devised and that speedily. The subject is again commended to the attention of the directors.

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 16. SALEM: JULY TO DEC., 1884. NOS. 7–12.

FIELD DAY AT TOPSFIELD, WEDNESDAY, JUNE 18, 1884.

NOTWITHSTANDING the extreme heat and dusty roads, a party numbering about sixty left Salem in carriages at 9 A. M. for a day in Topsfield. After a pleasant drive through Peabody and Danvers, the party arrived at the country residence of Col. T. W. Peirce, by whose kind invitation three hours were agreeably spent in rambling over the estate and visiting the greenhouses, conservatories, gardens and other places and objects of interest. This farm for some one hundred and fifty years was known as the old "Estey Place," previous to the sale, Sept. 5, 1821, to Hon. Benjamin W. Crowninshield of Salem,[1] by Daniel Estey of Topsfield, who inherited the same, by will, from his father Aaron Estey. The heirs of Mr. Crowninshield, April 21, 1852, sold to Dwight Boyden of Waltham;[2] Mr. Boyden, Sept. 10, 1852, to Frederick Boyden;[3] Mr. F. Boyden, June 2, 1856, to William Hammond Foster of Boston;[4] Mr. Foster, Jan'y 6, 1857, to the present proprietor, Thomas W. Peirce,[5] who has added to the original

[1] See Essex Reg. Deeds, Lib. 227, fol. 246. [2] Reg. Deeds, 460-54.
[3] Reg. Deeds, 468-237. [4] Reg. Deeds, 532-244. [5] Reg. Deeds, 544-129.

purchase by the annexation of adjoining lands, so that it now contains between four and five hundred acres. It is only within six or eight years that Mr. Peirce has inaugurated and perfected many extensive improvements: substantial and well-built faced stone walls now run all over the estate; low lands have been drained in a thorough and systematic manner, and the whole farm has been brought to a high degree of productiveness. The barn which was built by Mr. Aaron Goldthwaite of Salem, as were most of the other buildings, is an immense structure, the upper portion of which is used for the storage of hay, while the lower floor has accommodations for horses and cattle; the livestock now kept numbers 130 cows (and heifers), 11 working cattle, 8 horses and 4 bulls — Holstein, Ayrshire and Jerseys are the breeds represented; in the rear of the barn is the blacksmith's shop, with a twenty-horse power engine, where the general repairing of the farm tools is done; also the poultry house 100 feet by 15 feet, and other buildings. The Newburyport turnpike runs through the estate; the farmhouse and farm-buildings are located on the southern side, while the mansion house and porter's lodge (a most picturesque little cottage) are across the way on the hillside rising to the north. On the top of the hill in the rear of the house is a fine tower containing a tank with a capacity of 13,000 gallons; at the foot of the hill to the west is a never-failing supply of pure spring water and a pumping station. From the top of the tower is a magnificent view of the surrounding country and towns. Mt. Wachuset in this state, and the waters of Massachusetts Bay from Nahant to Cape Ann, are *always* visible on clear days; and the White Mountains are said to be occasionally seen.

The noonday lunch was partaken of in the large barn, tables and other suitable accommodations being provided.

At 2 P. M. the party drove to the Town Hall in Topsfield, about a mile and a half distant, where the afternoon session was held; the original party having increased to more than thrice its number by accessions from Topsfield, Groveland, Boxford and other towns in the vicinity.

At 2.30 P. M. the meeting was called to order by President Henry Wheatland, who in an opening address said that the exercises of the afternoon were arranged in commemoration of the fiftieth anniversary of the meeting held in Topsfield, on Wednesday, April 16, 1834, to complete the organization of the Essex County Natural History Society, one of the parent societies of the Essex Institute, preliminary meetings having been held at Salem in the December previous. It was intended that this meeting should have been held in April, but owing to the backwardness of the season and the inclement weather it was decided that it should be postponed to a day in June, to be selected by the committee on field meetings. Papers, especially prepared for this occasion, which are appended, were read by Prof. E. S. Morse, Mr. John Robinson, Rev. B. F. McDaniel and Mr. S. P. Fowler.

After the presentation of the papers the following gentlemen were called upon:

Hon. JAMES J. H. GREGORY commenced his remarks by quoting the old saying, "If you require proof of their work look around you," and applied it to what the society has done. One thing, he said, the other speakers had not touched upon,—local Indian antiquities and relics.[6]

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[6] This subject was assigned to Vice President Putnam, who had prepared himself to speak upon it, but was necessarily detained from the meeting.

Thirty-three years ago he deposited with the society the only collection it then possessed; now it has one of the finest collections owned by any society.

He spoke of the lack of knowledge of natural history and of neighborhood history, urging that those studies be taken up in our public schools. He also spoke of the progress which had been made in arriving at conclusions, formerly by theory which was often at fault, now by science which rarely errs.

Rev. FIELDER ISRAEL spoke of the work and influence of the society, and of the elevating and refining influence of the study of nature, at the same time making appropriate reference to the valuable services of the President, and to the pleasure which Deacon Fowler, the only survivor of those men present at the meeting of fifty years ago, must experience in being with us here to-day. He also alluded to the prospective influence of the society, and closed by offering the following vote which was adopted:

Voted, That the cordial thanks of the Essex Institute are due to Col. T. W. Peirce for his very generous hospitality in opening his house and the grounds of his fine estate for the gathering of to-day, and for the abundant and refreshing supplies furnished at lunch.

Also to the gentlemen having in charge the Town Hall for the gratuitous use of said hall for this meeting.

NOTES ON THE CONDITION OF ZOÖLOGY, FIFTY YEARS AGO AND TO-DAY: IN CONNECTION WITH THE GROWTH OF THE ESSEX INSTITUTE.

BY E. S. MORSE.

A MOST natural and appropriate theme for discourse on this, the fiftieth anniversary of the Essex County Natural History Society, would be a review of the sciences and their progress during the last half century. So wonderful and prodigious has been their growth however, that neither time nor strength has permitted the preparation of such a review. In lieu of this we may with propriety run back to the time of the first organization of this society, one of the first of its kind in the country, and contemplate the condition of affairs then, and the attitude science presents to-day.

At that time the burden of general discourses on zoölogical science was mainly of an apologetic nature. We were invited to steal away from the perplexing cares of life to quiet retreats and soothe ourselves in contemplating the beauties and wonders revealed to us in the products of nature's handiwork. Newton's apple, Young's soap-bubble, and Galvani's frog, as illustrations, were always at hand to show what great fields of research had been opened by the observation of simple facts ; but fifty years have rendered science such a power in the world that its study no longer requires an apology. Indeed, so many and such wonderful results have grown out of the most trivial beginnings that, nowadays, a man might thoughtfully and systematically study the flight of motes in the air and still be regarded as sane.

Every established fact in nature, however insignificant it may seem, is of importance. To-day, as well as fifty years ago, one might indeed find rest and infinite pleasure in turning from the tiresome thoroughfares of activity to a contemplation of nature's marvels. And herein lies the very great difference between the Society of Natural History fifty years ago and similar associations of to-day. The work done by these societies in past times is now relegated to the individual care of those who wish for a relief from the strain of business activities. Hogarth, in a letter to Ellis, portrays very well the spirit that animated many of the workers of the past, as expressed in the prefatory pages of their works. He says: "As for your pretty little seed-cups, or vases, they are a sweet confirmation of the pleasure Nature seems to take in superadding an elegance of form to most of her works, wherever you find them. How poor and bungling are all the imitations of art! When I have the pleasure of seeing you next we will sit down — nay, kneel down if you will — and admire these things." The societies of to-day, if they are to be of any use, must be cared for by trained and salaried specialists. In past times a few genial and pleasant people sauntered leisurely through the cabinets and admiringly examined the graceful shell or curious fossil. Now thousands of eager and critical students throng through the same halls, hungry for the impressive lessons that greet them from every case.

Through the all-embracing doctrines of evolution, man has awakened to the vivid realization that he is part and parcel of the domain of nature, which he had heretofore studied as a matter apart and beneath him. The realms of thought opened by Darwin show how intimately he is connected with the animals below him, and that somehow his welfare, moral and physical, is to be affected by a

more intimate knowledge of the life history of those creatures which he had only regarded with a curious eye.

The record of this society is one that may well excite pride, not only for the great work it has accomplished, but for the dignity of its past history. Its first journal was issued nearly fifty years ago, at about the same time with the journal of the Boston Society of Natural History and its publication had only been anticipated by those of the American Philosophical Society, the American Academy of Arts and Sciences, which dates from the latter part of the last century, the Philadelphia Academy and the New York Lyceum of Natural History. Indeed, these societies had issued but few numbers of their publications, when this institution, as represented by the Essex County Natural History Society, published the first number of its journal, and since that time a continuous series of scientific papers has issued from its councils.

Another matter for congratulation is that this society has always kept true to its name. It has been wholly for the benefit and in the interests of the good old county of Essex. Public meetings to the number of over two hundred in all, have been held in every corporate town in the county, with but one exception; and the enthusiasm of its members has often led it beyond the limits of the county and of the state. These excursions have gone into out-of-the-way places,— little villages, crossroads and hamlets by the sea. In short, the society has met in sixty-eight localities outside the corporate limits of Salem.

To these places has the society induced the celebrated naturalists of the country to bring the results of their researches, and the latest and freshest fruits of science. Agassiz, Wyman, Rogers, Jackson, and the younger generation of naturalists, Putnam, Verrill, Hyatt, Packard, Scudder, Allen, Coues, Dall, Gill, Kingsley, Robin-

son, Emerton and a host of others, have from time to time addressed the citizens of this county on almost every conceivable topic within the domain of natural science, while papers and memoirs from their pens have enriched the pages of your publications.

No better evidence can be adduced of its county character than the fact that its members are by no means confined to Salem, but are found scattered throughout the county, and the further fact that this important anniversary is being celebrated not in its halls at Salem, but here in this beautiful town of Topsfield.

In further evidence of the fact that it is a county society, it has especially aimed at forming a collection of the animals and plants of Essex County, and through the devotion of Putnam, Cooke, Richard H. Wheatland, Robinson, Sears, Emerton, and many others, it has brought together a local collection of the first importance in this country. It can be said, without fear of contradiction, that in no other society in America can so complete and exhaustive a local collection of animals and plants be found, as has been brought together by this society. A general review of this nature will not permit us to point out the numerous species new to science or forms new to the state which have been added by these assiduous efforts.

Let us glance at the first volume published by the society nearly fifty years ago, and catch a glimpse of the poverty of resources with which these early pioneers heroically set out in their task. In this volume was published a catalogue of books, the working tools of a naturalist. A few of our lunch baskets might have held the entire library, and this collection consisted of a few volumes of the transactions of the Philadelphia Academy, and the opening numbers, with pages freshly cut, of one or two other societies, containing the germs of American zoölogy

and botany. This material consisted almost entirely of specific descriptions and the modest establishment of a few new genera. Outside of these publications, with the exception of works by Audubon, Nuttall, Wilson and a few others, there was absolutely nothing to which the student could refer to aid him in his studies. Since that time what wonderful progress! States with their organized scientific surveys, fish commissions, state boards of health, mindful of the germ theory of disease, and above and beyond all, the stupendous achievements of the United States Government Surveys with their great libraries of publications freely distributed throughout the land!

When our venerable president, Dr. Wheatland, first taught the young and ardent naturalist Stimpson the mysteries of dredging from a dory, how little could he have anticipated that within so short a time a United States' steam vessel, fitted with dredges and all the paraphernalia of deep-sea collecting, and attended by a corps of trained naturalists, should visit the county for several successive seasons for the sole purpose of dredging, and that this government and European governments should sustain expeditions for the purpose of dredging in the deepest abysses of the ocean!

At that time there was not a single text-book of zoölogy in our schools; now, nearly every high and classical school in the land has its classes in zoölogy and botany. Then not a college in the land with its special professor of natural science; now, every college with its special instructor in those branches and with rapidly growing museums. At that time not a single popular periodical devoted to these sciences; now, a number of illustrated weeklies and monthlies with large circulation. And here it is a matter of pride to state that the first and among the most important of these magazines, the American Natural-

ist, came into existence under the support and patronage of the Essex Institute, whose name it bore upon its cover during its earliest years, having in reality been founded and edited by one of its members.

At that time the newspapers recognized science by publishing now and then short paragraphs about five-legged kittens, or accounts of the hackneyed drop of water with its myriads of animalcules disporting within. Now, the freshest results of science published in technical language appear side by side with the gossip of the town. A comet appearing then was dismissed with a paragraph of a few lines or an apostrophe in the poet's corner. Now, the daily paper publishes a whole broadside about the subject from the pen of some able astronomer and illustrated by diagrams. It is safe to say that the daily newspapers of the country in a single day publish more strictly scientific matter than could be brought together in all the pages of a scientific library of fifty years ago. At that time a few men with unvarying monotony akin to an inherited instinct were recording the daily winds and temperatures; now, we have an organized meteorological bureau whose weather predictions have excited the admiration of the world.

At that time the science of archæology was not born. Evidences of the high antiquity of man had been brought forward only to be rejected as contrary to Jewish chronology; now, it is the most vigorous and aggressive of all the sciences, and one of Essex County's gifted sons, Mr. Putnam, whose name has been so intimately identified with the work of this society, is at the head of an endowed museum of archæology at Cambridge, and is for the first time teaching the country the proper and only way of exploring the mysterious mounds of the West. His discoveries thus far have revealed such rich fields

of research in our country that one is led to wonder that a single penny should ever be spent abroad for work of this kind while so much remains to be done here.

To come nearer home. At that time the unrivalled ethnological collections of the East India Marine Society could be got access to only by soliciting permission from some one of its members, most of whom at that time were scattered over the world in the interests of Salem's commerce. Now, through the liberality of the great Essex philanthropist, in founding the Peabody Academy of Science, and the wise administration of its trustees, these invaluable collections are open daily, free to all, and a throng of forty thousand people annually pours through the open doors. Liberal provisions are made to augment these collections and the additions in the past ten years have outnumbered the original collection. The biological collections of this society, as well, have been cared for in the same manner and are equally accessible.

As to the growth of the Institute it is a matter of wonder and pride that, until recently without special funds, save what it derived from the annual assessments of its members, it should have obtained the position it holds to-day.

It is almost pathetic to read the first address by Prof. John L. Russell before the society in 1836, and see how meagre were the possessions over which its members were felicitating themselves. Mr. Russell speaks in glowing terms of the "spacious and commodious halls, furnished with elegant and useful cabinets" and the library of one hundred volumes! And this was absolutely all: a few heroic members paying out of their own pockets in disproportionate sums the funds necessary to sustain even this display. How faintly could he have conceived that within fifty years this society should have grown to one of three hundred and forty members, with a library

of thirty-eight thousand volumes and invested funds to the amount of fifty thousand dollars.

While this prosperous growth is due in part to the rich intellectual soil from which it sprang, a very great credit is due to the unselfish and unceasing labors of its one persistent associate, our devoted president, who has been with it from its inception and who as an officer has been intimately connected with it at every stage of its development.

It is not a little remarkable that an organization embracing, as it has for thirty-five years, an historical as well as a natural history society, should have received from this man impartial solicitude and attention. Voluminous papers and memoirs, historical and biological, have been published in its proceedings. Matters pertaining to both subjects have often come up for discussion at the same meetings, and yet there have been no dissensions nor jealousies between the two branches. No factions have developed. The curse of political methods has never entered its councils. Perhaps it augured well for the society that its first act of incorporation was signed by educators and statesmen, by Horace Mann, then President of the Senate and Edward Everett, Governor of the Commonwealth.

Surely such harmony indicates the patience and sagacity with which its work has been guided. Certainly the highest compliment our president could receive is, that during the space of fifty years in which time he has successively held all the offices to the highest, he has been heartily seconded in every effort for its welfare.

With all this vitality and growth, this society is the only one of any age and importance in the country that has never had a home of its own. The Portland Society of Natural History, though twice burned out, has still a

building of its own. The Boston Society of Natural History, the Antiquarian Society at Worcester, not to mention other societies throughout the country, occupy buildings which they possess through the liberality of their patrons. This society, on the contrary, has had to hire rooms from the moment of its inception to the present time. Its name has been carried, on its publications, to the four quarters of the globe, yet it has never had the supreme comfort of seeing permanently wrought in stone over its own door the name which has done the county so much honor and credit at home and abroad.

At present it finds accommodations in rented rooms in a building far from fire-proof where it has stored away portraits and manuscripts of inestimable value, and its shelves fairly groan with the weight of its library accumulations, yet no citizen of the city or county has been prompted to perpetuate his name by securing for this worthy society a permanent habitation suited to its rapidly increasing needs.

In fifty years the society has attained more than its most sanguine friends could have hoped for. May it not be many years before successful efforts shall be made to secure a solid and fire-proof structure over whose portal the name of the Essex Institute shall be wrought in enduring stone, as a memorial of the past, and an inspiration for the days to come!

THE PROGRESS OF BOTANY IN ESSEX COUNTY DURING THE LAST HALF CENTURY, ESPECIALLY AS INFLUENCED BY THE ESSEX COUNTY NATURAL HISTORY SOCIETY AND THE ESSEX INSTITUTE. 1834–1884.

BY JOHN ROBINSON.

One of our older botanists has said that the careful study of the flora of a very limited region might well occupy the lifetime of any person, and that the result accomplished would contribute more information of real value to science than any general work the same individual would be likely to undertake successfully.

This sentiment applies to the institution as well as the individual. Too often we see the local scientific society striving, not to emulate the spirit, but actually imitating the work of state or national institutions, totally neglecting, all the while, the more important duty of first presenting to the public a complete exhibit of the natural products of the fields, the forests, and the waters of the immediate neighborhood, and of encouraging an earnest study on the part of the people, especially the younger, of the natural objects met in every-day life, with which it is safe to say few are at all well acquainted.

How many persons outside of a scientific class should we be likely to find who could, even to-day, readily and correctly give, in outline, the life-history of a single animal or plant? We find many persons who are familiar with the common field flowers, but how many of these could tell us a word of the grasses or sedges, or, give us even the common names of half the forest trees growing naturally in our own county of Essex? And yet, in the whole course of botanical investigation, there are no plants

so common as grasses or so conspicuous as the forest trees; there are none of more value considered economically and none of greater importance to the practical farmer and mechanic. Happily, however, it cannot be said that the Essex Institute has materially erred in this direction, as may be shown to-day, by the present excellent local herbarium originally begun by the Essex County Natural History Society and the numerous natural history field-clubs, children, so to speak, of the Essex Institute, successfully established in various parts of the county, whose members hold their meetings and collect and study the native plants and animals.

To consider the progress of botany in Essex County for half a century three points present themselves: (1) The condition of botanical knowledge now as compared with that of fifty years ago. (2) The progress made in fifty years' work here, as shown by the increase of libraries, public museums, private herbaria, etc. (3) The practical benefit and general knowledge bestowed upon the people of the county by such increased accurate knowledge of the subject and the facilities for obtaining it.

Prior to 1834, the young zoologist had little in the way of books or collections to aid his studies. Throughout the county but few students of animal life had been developed. No convenient text-book had then been written applicable to this region, and many of the common forms, among the lower animals, had not even been described. The expense and difficulty of preserving specimens prevented the formation of private collections in many departments. In this part of the country, the museum of the East India Marine Society had alone attained any considerable size, and that collection was only open to the public as a special favor and contained but little in the way of specimens illustrating local natural history.

The railroads had not been built, and stage communication was so slow and expensive that the young student could not run to Boston or Cambridge of a holiday to consult libraries and collections even had they existed, as now, in those places.

With the botanist, however, it was somewhat different. Although the life-histories of plants were little known, and the theory of natural selection and evolution from lower forms was comparatively unheard of, and species were more considered than morphological relations; yet, in Dr. Jacob Bigelow's "Florula Bostoniensis," first printed in 1814, the second and enlarged edition of which had appeared in 1826, the young botanist had the golden key which should introduce him to an intimate acquaintance with nearly every flower and tree his path might cross, in any ramble, hereabouts, and through this acquaintance with their names and natures lead him to the closer study of their structure and morphology. To those of us who are only familiar with the study of botany to-day it is difficult to realize the importance of Dr. Bigelow's little volume, or the labor and study expended in its preparation. Begun as a sensible recreation from his arduous professional labors, it became the standard for all botanists in this part of the country, and, for more than a third of a century held the ground undisputed, until the larger and more elaborate works of Dr. Asa Gray superseded it.

The study of botany in Essex County, we may say in New England, properly dates from the time of Rev. Manasseh Cutler at the close of the last century. Early writers as Francis Higginson, John Josselyn, William Wood, John Winthrop and others refer to the native fruits and flowers. Josselyn published the well known "New England Rarities Discovered," an edition of which

has been prepared in recent years with valuable notes by Professor Tuckerman, and Higginson in a letter written from Salem in 1629–30 (Mass. Hist. Coll., Vol. I, p. 121) speaks of the "Flowering Mulberry," or Raspberry, and "Chervil," or Sweet Cicely, as growing near Salem in places, where certainly, until a very few years, these interesting historical plants still flourished. None of these writers can, however, be considered as Essex County botanists, and it is not until the close of the American Revolution that we find any serious or scientific study of the plants of the county. Manasseh Cutler of Hamilton, after his varied services as revolutionary chaplain, lawyer, pastor, doctor, reformer and pioneer, found time to prepare in 1783–4, as the title of his paper, says: "An account of some of the vegetable productions growing in this part of America, botanically arranged." This was published in the first volume of the "Memoirs of the American Academy of Arts and Sciences" which was printed in 1785, where some three hundred and fifty species of flowering plants were described and several important scientific points suggested which have since been adopted in botanical treatises. It was his intention to extend this work, and several manuscript volumes are now in existence prepared toward this end. Dr. Cutler's paper bears the date of presentation Jan. 26, 1784, and, therefore, we are not only celebrating to-day the semi-centennial anniversary of the first organization formed in Essex Country for the study of botany and kindred subjects, but the full centennial anniversary of the presentation of the first work upon the flora of Essex County by the first Essex County botanist.

Following Cutler came Drs. George Osgood and Andrew Nichols: the former contributed notes for Bigelow's "Florula Bostoniensis," and the latter delivered, in 1816,

a series of lectures on botany, the first of such given in this part of the country. Dr. Nichols was later one of the founders of the Essex County Natural History Society and its president, and thus has had an important influence upon local botanical work. In 1823, two young men, both destined to be long remembered on account of their contributions to botanical knowledge, began their work in Essex County. These were William Oakes of Danvers, later of Ipswich, and Charles Pickering, then spending much of his time at the homestead of his grandfather Col. Timothy Pickering at Wenham.

Oakes, disgusted with the law, his chosen profession, became the first critical botanist of the region, and at this time converted Dr. Pickering from conchology, a study he had first chosen, to botany.

Oakes botanized with Pickering extensively in Essex County, particularly in the Great Swamp, Wenham, a region then almost in its pristine wildness. Oakes afterwards prepared a list of Vermont plants for Thompson's history of that state, and had in contemplation a work on the plants of New England, which, owing to the appearance of Beck's Botany, was never completed. His most elaborate work was a folio volume on White Mountain scenery illustrated by Sprague, which, however, was not published until after his death in 1848. Oakes was impulsive and generous, and thoroughly in earnest in his favorite study. Like many men of note he was but little appreciated while living, yet no monument could have been erected to make his memory more cherished and his labors more respected than that which he left behind : an extensive collection of beautifully prepared botanical specimens determined with faultless accuracy, a portion of which formed the nucleus of the present county botanical cabinet now in the hands of the Peabody Academy of Science in Salem.

Dr. Pickering, in 1838, joined the Wilkes Exploring Expedition, of which he had been appointed the naturalist, and from that time until his death in 1881, his entire life was devoted to important works on zoology and botany.

We thus find in 1834, at the time of the foundation of the Essex County Natural History Society, a strong impetus had been given to the study of botany, beginning at Cutler's time and continuing directly to this date, through those who had been the disciples of Cutler himself, and that, developed at the same time, through a different channel, however, Bigelow's Botany had reached its second and enlarged condition.

For the systematic student, therefore, the path was made easy. In the departments of vegetable physiology the works of the older authors were accessible to those who could cope with the Latin, in which language they were chiefly written. Sprengel, the forerunner of Darwin, had, forty years before, published his work on the fertilization of flowers, which, however, was but little known; Andrew Knight had followed in 1800; Hale's experiments with the sunflowers were published and pictured, and the Jussieus, Schacht and Schleiden had swelled the writings on these and kindred subjects.

It is not to be wondered, therefore, at the first meetings of the new society, and later at those of the Essex Institute, that the subject of botany should have absorbed a large share of the time in its consideration, and that horticulture, its close kin, should develop in our midst even to becoming the mainstay of the Institute in its early and less prosperous days by furnishing the attraction to its rooms for the outside public, and through the proceeds of the regularly conducted exhibitions replenish the often scanty exchequer.

But even with the advantages these men thought they

possessed, how should we, to-day, think to accomplish any important results? The microscope furnished by Mr. Cole, the liberal amateur, was too costly a piece of mechanism to be even hoped for, except by few. Drying paper could not then be had, cheaply, at any natural history store. Indeed, no natural history store itself then existed. Horse-cars and steam railroads were not at the doors and street corners to take the collector swiftly to the woods and fields. Yet, patiently and surely, the work proceeded and collections were formed and new truths discovered.

To-day five editions of Asa Gray's Manual of Botany are broadcast over the land and countless variations, by his publishers, of Dr. Gray's other works are with it. Alphonso Wood has scarcely fewer followers, while the publications from innumerable other authors bring up the rear. Works on local floras are abundant. A good compound microscope can be had by almost any thrifty botanical student, and an excellent magnifying glass can at least be owned by all. Drying paper is on sale, as are also regulation size herbarium sheets and genus covers, in almost every city. Herbaria for consultation are everywhere accessible. We can run off in the cars, collect our box of plants, and be back to dinner, or, to Boston or Cambridge for consultation and exchange of ideas as quickly. In fact, we live in an age of such unheard-of advantages and luxury that, doubtless, we do not appreciate our privileges and have not half respect enough for the botanists of fifty years ago. The change is none the less marked to the student of vegetable physiology than to the collector of plants. Charles Darwin has come upon the scene and left it again, but left behind him an impression never to be effaced; he has revolutionized botanical study in many of its branches as much as he has that of zoölogy.

Gray has given us in the text-book of structural botany an almost perfect work, while translations of Sach's great volume are in most libraries, and, besides, almost every mail brings to our table magazines devoted specially to botanical research, filled with the latest information from every quarter of the globe. In short, the study of botany from being looked upon as merely including the collecting and naming of plants, has been shown to be of a widely different nature in its highest aims; the study of the life-history of the individual and its relations to other forms. No longer do we draw an impassable line between the flowering plants and cryptogams; recent study proves that no such line exists. Instead of a mass of disconnected members we are taught to see a graduated line reaching from the humblest one-celled alga to the loftiest and most highly developed monarch of the forest.

And what then are the visible results in Essex County of this fifty years of labor?

The nucleus of the herbarium begun by Oakes and Nichols has grown into a collection including some 4,000 sheets of mounted plants and 200 wood specimens, representing nearly 1,700 species of plants, native or naturalized in Essex County, besides a reference collection of about 10,000 specimens from all parts of the world, all of which is now neatly arranged and properly cared for by the Peabody Academy of Science, at whose rooms it is open for free consultation by any botanist in the county. With this collection are the latest botanical reference books and microscopes for the use of students. Lectures and instruction in botany have formed part of the regular work of the Academy, where classes have regularly been conducted for several years. At the evening meetings of the Essex Institute many papers of value on this subject have been presented, while the influence of the two hun-

dred field meetings, which the Institute has held in all parts of the county, cannot even be approximated. The last important work in this direction was the Catalogue of the Flora of Essex County, a volume of two hundred pages, published by the Institute, in 1880.

Many museums, societies and clubs have sprung up throughout the county, and we frequently see in the local press accounts of the meetings of the "West Newbury Natural History Club," the "Cape Ann Scientific Association," the "Boxford Natural History Club," or those of similar organizations in Lynn, Georgetown, Amesbury, Marblehead and elsewhere. Many of these societies, as well as some of our educational institutions, possess valuable herbaria, and in several instances lists of the floras of the towns have been published. Of private collections it is impossible to speak. Their number is legion; many are confined to special groups, as trees, ferns, grasses, mosses, sea-weeds, etc. Some are more general in character, and many are both extensive and valuable.

We could extend this enumeration to many pages, but the brief outline here given must suffice to indicate these visible results.

Of the influence exerted upon the people, as a whole, and of the increase of students on these subjects it is more difficult to speak accurately.

Fifty years ago, William Oakes, searching on hands and knees for half an hour, to obtain a few capsules of a rare moss, was thought, by a worthy country woman who had watched his movements, to be a harmless insane person, and, in simple kindheartedness, she took him a slice of bread and butter. It is doubtful if such a thing could happen now, although it is not unusual for the botanical collector to be curiously questioned as to the commodity he has on sale in the green box, or to be addressed from

the second story window of some house at which he may called for a drink of water after a dusty walk, being mistaken for a marauding tramp.

There is, however, no doubt that the general information of the people of Essex County, on the subject of botany, has vastly increased. The importance of the relations of certain insects to flowers is now so generally known that it would hardly be possible to find a community so stupidly ignorant as to be jealous of a neighbor's honey bees and almost drive him from the town in consequence, and this did actually happen in Essex County thirty years ago.

The distribution of useful scientific information through the county, and agricultural papers, is now so widely felt, and scientific lectures are so numerous, even in the smaller towns, that notions and superstitions, born of isolation and seclusion, are vanishing as mists before the morning sun. No longer do the former utterances of the lecturer or the writings of the essayist satisfy the growing demand. Mere accounts of habits and classification are still satisfactory to a juvenile audience, but for the maturer mind a deeper and more philosophical theme is required. Scientific books are more read and hence are more extensively purchased by the libraries. The benefits are twofold. Superstition is banished, and observation and rational thought encouraged.

This institution cannot, of course, be credited with all this change and improvement. Other forces have been steadily at work. The labors of our ancient and most excellent Essex Agricultural Society and its farmers' institutes, are an important factor not to be overlooked. The press and the pulpit have grown and developed immeasurably also, and have had their powerful influences brought to bear in the right direction, and natural

history has been introduced as a regular study in our higher grades of schools. Yet this institution has done a lion's share. Beginning before others, it has been as the leaven for the whole lump, preparing the people for all truth and wisdom. It has encouraged those who needed encouragement and offered facilities to those ready to work. Through its publications it has furnished the medium for the expression of ideas and the presentation of the results of scientific investigations, and it has sustained, at home and abroad, a reputation for Essex County as a scientific and intellectual centre. It is an honorable record, and this institution may well be proud of the result of its fifty years of labor. And in connection with this work the names of Cutler, Oakes, Pickering, Osgood, Russell and many other botanists will always be remembered with gratitude. They helped each other, and though all have passed away the result of their work will be a help to every future botanist who shall collect or study in Essex County.

Nor can I close without expressing my personal indebtedness to my old and honored friend, our president. To his belief in the necessity of encouraging the young student is in a great measure due the perpetuation of the institution he helped so ably to begin. He has ever believed that young laborers and new men must be engrafted on the old stock. I feel for myself as I know it has been with others, that what I have enjoyed of botany, of natural history generally, of museum work, is due to the encouragement given and the trust placed in me by him when I was but a boy, and if I have added the least of value to the work of those who have preceded me, it is the result of the stimulus coming of such encouragement and trust.

GEOLOGY AND MINERALOGY IN ESSEX COUNTY, MASS.

BY B. F. McDANIEL.

THE first organized effort in the United States for the study of geology and mineralogy was the "Mineralogical Society," formed in New York city in 1798.

In appealing for aid and sympathy, information was especially desired as to the localities, quantity, and quality of gunflints, brimstone, saltpetre and lead.

Evidently the society meant to justify its existence. The state of the science is forcibly revealed by Professor Silliman, the elder, in 1818. "Notwithstanding the laudable efforts of a few gentlemen," he says, "to excite some taste for mineralogy, so little has been effected in forming collections, in kindling curiosity, and in diffusing information, that only fifteen years since (1803), it was a matter of extreme difficulty to obtain the names of the common stones and minerals; and one might inquire earnestly and long before he could find any one to identify even quartz, feldspar, or hornblende among the simple minerals, or granite, porphyry, or trap among the rocks.

We speak from experience, and well remember with what impatient, but almost despairing curiosity we eyed the bleak, naked ridges which impended over the valleys and plains that were the scenes of our youthful excursions.

In vain did we doubt that the glittering spangles of mica and the still more alluring brilliancy of pyrites gave assurance of the existence of the precious metals in those substances, or that the cutting of glass by the garnet and quartz proved that these minerals were the diamond; but,

if they were not precious metals and diamonds, we in vain inquired of our teachers what they were."

In the next twenty-five years, interest in this science rapidly increased. In 1825 Dr. Samuel Robinson published a "Catalogue of American Minerals," an octavo of 300 pages, giving the localities of all known minerals in the United States and British Provinces. Prof. Parker Cleaveland's "Treatise on Mineralogy and Geology" was first published in 1816, and marked an epoch in American science.

In 1824, North Carolina, the first state to take such action, authorized a geological survey.

In June, 1830, Massachusetts commissioned Prof. Edward Hitchcock to do the same work for this state. Other states followed, until now the whole extent of the country has been or is now being surveyed.

It is here to be noticed that the sciences of geology and mineralogy have made great and important strides away from the comparatively primitive knowledge and methods of the early part of this century. Then the terminology of both sciences was largely based on the external appearances of rocks and minerals. Hence an imperfect classification and many errors. The long and fierce quarrel between the Wernerian or Neptunian, and the Huttonian or Plutonian schools of geology had not yet settled down into the present dispassionate weighing of evidence.

The science of geology was not yet free and independent, but was subjected to tests and made to do duty in foreign fields, where its development was checked.

But the practical study of geology and mineralogy won many minds who cared little for speculative discussion, and who, indeed, did not feel competent to master the abstract principles of either science. The early local scientific societies were not largely made up of scientific men, but

of those whose hearts were touched with the beauties and wonders of nature, and who wished to sit in her school as humble disciples.

They were observers, with the true passion for knowledge,— explorers, whose zeal carried them through many difficulties and hardships, and rewarded them with many brilliant discoveries. Such were the early workers in the field of geology in this county.

The Essex County Natural History Society and its successor, the Essex Institute, have given their attention almost wholly to botany, zoölogy and prehistoric archæology, owing to the bent and profession of their leading members. In these directions they have given the Essex Institute and the Peabody Academy of Science a world-wide reputation. Had the same thorough and continuous work been done in the fields of which this paper treats, I believe that results hardly less brilliant and helpful to science would have been realized.

The geology of Essex County is not rich in metalliferous deposits, nor even as far as we know in valuable minerals; but both Rockport and Newburyport have yielded surprises to the older mineralogists, the former giving two new species to the science. Dana gives but eight towns in our county as mineral localities, one of which, the sodalite of Salem Neck, is only a reminiscence. Other localities have been named by Hitchcock and others, but little has been taken out of them. For instance, the evidence for the existence of the Topsfield copper mine rests at the bottom of the Atlantic. Geological and mineralogical investigation has been pursued here in a desultory way.

In the first three volumes of the Proceedings of the Institute are preserved the accounts of the early labors in this department. I will now briefly review them. Two

of the most eminent mineralogists of that time were Dr. Charles T. Jackson and Mr. Francis Alger. They attended the second field meeting of the Institute at Lynnfield, in July, 1849. The serpentine ledges there, like those in Newbury, then gave promise of a rich output of decorative marble.

It is unfortunate that this promise has not been realized. From an extensive acquaintance with the formation at Newburyport, I am satisfied that the deposit there may yet yield handsome returns for a comparatively small outlay.

The name of Dr. Andrew Nichols, of Danvers, early appears among the earnest and intelligent naturalists in the ranks of the Institute.

In a notice of his death, at the annual meeting, May, 1853, hearty testimony was borne to his noble work in the several departments of natural history prosecuted by the Institute. Nothing in the natural world escaped his questioning mind, and his power of imparting the results of his studies was equally felicitous. To him, it was said, we owe a great deal for the development of natural science in this county.

Dr. William Prescott, of Lynn, afterwards of Concord, N. H., where he died, was another earnest spirit and ready helper. He studied enthusiastically the geology and mineralogy of his neighborhood, and contributed generously of his stores to the cabinets of the Institute.

I was present at the sale of his collections in Concord, which were very large and rich, but like all such things sold at auctions, suffered a grievous slaughter.

The Rev. A. P. Chute, of Lynnfield, was another efficient worker in these fields. At the several meetings held at that place, Mr. Chute showed evidences of earnest and intelligent work. January, 1856, he made a report

to the Institute on the sodalite found on Salem Neck, which Mr. D. M. Balch reported on again more thoroughly in 1864. At a field meeting in Lynnfield, in Oct., 1856, Mr. Chute displayed cabinet specimens of chlorite, epidote, smoky quartz, fluorite (white and purple), feldspar, albite, pyrites, magnetite, siderite, magnesite, serpentine and manganese, the last probably dendritic, that he found in that town.

In 1857, Mr. B. F. Mudge, of Lynn, appears among the Institute workers in the field of geology. At the field meetings in Lynn, Nahant and Lynnfield, Mr. Mudge rendered efficient aid in his department, and in other ways at other times served the Institute. He gave the names of fifteen minerals that he had found in Nahant.

Mr. J. J. H. Gregory, of Marblehead, appears as early as 1858 among the active forces of our society, admirably filling the place made vacant by Mr. Mudge's removal to the west. He has been a faithful attendant and valuable helper ever since, the Proceedings of the Institute bearing witness to the diligence and intelligence of his geological studies. In Sept., 1858, Mr. Gregory read a paper on "The Geology of Marblehead," which, with such additions as more recent research might offer, might profitably appear among the publications of the Institute.

In 1860, Mr. D. M. Balch became curator of mineralogy. The Proceedings of the Institute bear record to his fidelity and competency.

Jan. 7, 1861, Mr. S. S. Mackenzie presented a paper on "The Geology of Topsfield," showing close and careful observation, but offering little of interest to the mineralogist.

Like all of our towns, Topsfield was early agitated by the gold fever, iron pyrites being in nearly all cases the

gay deceiver. One Smith, digging a well in this town, found a lump of what he supposed to be gold, and placed it on the mantle in his house. One day a stranger called and asked for a drink of cider. While Mr. Smith was absent in the cellar drawing the beverage, the visitor departed, taking the tempting mineral with him. A circle drawn with chalk on the floor showed where he had last stood. It is needless to suggest who the stranger was held to be.

In 1861, Rev. Stillman Barden reinforced the ranks of the Institute workers in the field we are now considering, and until his death contributed generously by voice and gifts of specimens to elucidate the geology of the county. Called to live at Rockport, he was the first to develop the mineral treasures of that place.

At field meetings held there in August, 1862, and August, 1863, he won the cordial praise of Dr. Chas. T. Jackson, Mr. Francis Alger and Prof. Alpheus Hyatt for his enthusiastic and intelligent labors in that interesting field; thereby the attention of trained scientists was drawn to the locality, and two new species discovered, besides the more accurate definition given to those already known.

In July, 1867, at a field meeting held in Andover, Prof. C. H. Hitchcock made an address chiefly in explanation of the kames or glacial ridges in that town and section. The study of these formations has since been ably pursued by Rev. George F. Wright, lately of Andover, now of Oberlin, Ohio, and two communications made by him to this society have been published in pamphlet form. This has been the first thorough, systematic work done by an amateur. That it has won the recognition and hearty approval of professionals has been simple justice, for no trained scientist could have more fully met

the conditions of his work than has Mr. Wright. His removal from the county is deeply to be regretted.

Following the meeting of the American Association for the Advancement of Science in Salem in 1869, a number of its members made a visit to Rockport, under the auspices of the Institute. Col. J. W. Foster, the eminent archæologist of Illinois, and Professor T. Sterry Hunt, made interesting and valuable addresses at the meeting there gathered.

The work I have mentioned has been largely done in a desultory way, and by untrained local students. Prof. Alpheus Hyatt and others had given some attention to our local geology, and in May, 1871, Professor Hyatt read a paper before the Institute on this subject.

This marked the beginning of a thorough detailed study of the district. Prof. Edward Hitchcock, in his report and map of 1841, and Prof. C. H. Hitchcock, in his map of 1871, had drawn the substantial geological features of the county; but as scientific views change rapidly and often radically, Professor Hyatt, in his more minute and recent investigations, found reasons for differing from their conclusions. He made a detailed map in colors of the geology of Marblehead Neck, which is now in the Mass. Institute of Technology.

Mr. M. E. Wadsworth, of the Boston Society of Natural History, and Prof. T. Sterry Hunt (see his "Chemical and Geological Essays") deserve mention for valuable, original work on the geology of this region.

Professor Hyatt's work has been taken up, and under his direction carried to greater completeness by Mr. W. O. Crosby, by whom a map and report were prepared under the patronage of the Mass. Commission to the Centennial Exhibition in 1876. In this report we have the first detailed and comprehensive statement of the geology

of Essex County, based on intimate personal study in the field.

But Mr. Crosby did not stop with this brief exposition. He prosecuted his work in the field and laboratory, and in 1880 published an octavo volume of two hundred and ninety-five pages, with an accompanying map, entitled "Contributions to the Geology of Eastern Massachusetts." It appeared under the auspices of the Boston Society of Natural History, with which he is officially connected.

The volume is a worthy monument of years of careful research and study, but its author disclaims any pretensions to completeness. In the nature of the case, it cannot be exhaustive. Large tracts of rocks, that are needed to verify inferences, are covered by drift and water, and future explorations and quarry-workings must be looked to for the explication of some unsolved questions.

It is hoped that an abstract of Mr. Crosby's report, with a geological map of the county, will be published by the Institute for the use of our schools and public libraries.

My report has come to an end, but the work of which it treats may be said to have been just begun, in a way that will need no radical revision. It is a work to which all observing, inquiring minds can contribute.

The intelligent farmer in his fields, the teacher and her scholars in their rambles, whoever has eyes to see, can help the geologist to complete the story of creation written on the great stone leaves of the earth's crust. The rewards of such work lie in the discovered facts, without which man knows not all the beauties and riches of his earthly home, and even the commonest life is not complete.

AN HISTORICAL SKETCH.

BY SAMUEL P. FOWLER.

THE Essex County Natural History Society was organized on the eighteenth day of December, 1833, in Salem. The officers of the society who were then elected were: Dr. Andrew Nichols of the old town of Danvers, president; Mr. William Oakes, of Ipswich, and Rev. Gardner B. Perry, of Bradford, vice presidents; Mr. John M. Ives, of Salem, secretary and treasurer; Rev. John Lewis Russell, of Salem, librarian and cabinet-keeper; William Oakes, of Ipswich, John C. Lee, of Salem, Thomas Spencer, of Salem, and Charles G. Page, of Salem, curators.

Andrew Nichols, William Oakes, William Prescott and their associates were made a corporation under the name of the Essex County Natural History Society, February 12, 1836. A circular, dated Jan. 1, 1834, was published and distributed, setting forth the object of the society, which was to promote more generally the study of natural history in the county of Essex.

We may further notice the gallantry of the men who formed this society fifty years ago in inviting ladies to join in their work, not because there was at that time any discussion concerning woman's rights, but because they well knew the fondness of the fair sex for flowers and the beautiful things of nature.

I am an old man, but in the course of my long life I have never yet met with a woman who would say she was not fond of flowers. In this circular they say em-

phatically, "Ladies, you will perceive, are not excluded, and it is anticipated that they will contribute much to the success of the society. Several in Salem have already become subscribers."

These anticipations have been more than realized. Ladies have always taken a deep interest in the society and its work, and have greatly aided us in many ways and by gifts of substantial value. It would be interesting to know who were the ladies who first became members of the society.

The first anniversary address delivered before the Essex County Natural History Society was by Rev. John Lewis Russell, June 15, 1836.

On the sixteenth day of April, 1834, the society held its first field meeting at Topsfield, at the hotel then standing on the line of the Newburyport turnpike.

The company came in carriages, as railroads were then unheard of. I came to the meeting in a chaise with Dr. Ebenezer Hunt. The following persons were present: Dr. Andrew Nichols, of Danvers; William Oakes, Esq., of Ipswich; Rev. Gardner B. Perry, of Bradford; Mr. John M. Ives, of Salem; Mr. Benjamin Hale Ives, of Salem; Rev. John Lewis Russell, of Salem; Dr. Ebenezer Hunt, of Danvers; and Samuel P. Fowler, of Danvers; and perhaps some others whose names may have escaped my recollection. Only one of those then present is now living. Several of the party brought with them specimens of natural history, Mr. William Oakes bringing several of the beautiful plates of Audubon's magnificent work on the Birds of North America. The field meeting which was held fifty years ago was much like those of the present day. Rev. Mr. Russell, when alluding to it in his address, says, "the season, the weather,

the day were auspicious. It seemed as if Nature herself was smiling on our prospects and inviting us to her study and acquaintance, the lovely Hepatica and pure Sanguinaria were blooming under our feet, and assisted to adorn our tables." After dinner a stroll was taken in the woods and fields, and among the plants gathered was a fine specimen of Blood Root (*Sanguinaria Canadensis*) which was taken up with a spade, and upon our return to the hotel it was placed on the middle of the table with a newspaper under it, when we pledged ourselves to sustain the Essex County Natural History Society and promote its interest.

To carry out this intention, the several persons who were known to be interested in the study of any particular branch of natural history were requested to bring forward to the field meetings such specimens as they possessed or might find in their rambles. All through those early days of the society our pledge was well kept, notwithstanding the laughter noticed on the countenances of some persons when told we were posy-seekers and bug-hunters. But neither the sneer of the unthinking nor "the world's dread laugh" for a moment deterred us from going forward in the study of the natural history of the county of Essex. Farmers and gardeners have since derived important knowledge from the labors of entomologists, and in consequence of the constant increase of injurious insects it has now become necessary to make entomology a study for the preservation of our crops.

The love of flowers, their study and cultivation, have greatly increased in these fifty years. Flowers are now used at most public meetings and gatherings and are seen in churches. They are now profusely used at the burial of the dead, when fifty years ago the only plant you would

have seen at a funeral was a handful of tansy gathered from the garden or roadside and thrown upon the coffin.

The Essex County Natural History Society has not become extinct, although its name was given up when it was merged in the Essex Institute, which includes both those who study the wonders of nature and those whose tastes lead them to search out the events of the past.

The Essex Institute was formed by the union of the Essex Historical and the Essex County Natural History Societies. To effect this end the two societies held several meetings during the autumn of 1847. A joint committee was appointed to draft a plan to serve as a basis of organization. The plan offered by the committee was accepted by the societies at a meeting Jan. 14, 1848. An Act of Incorporation, from the Legislature, was obtained in February of the same year; and on the first of March following, by its acceptance, the Essex Institute was organized and the following officers chosen: Daniel A. White, President; John G. King, John Lewis Russell and John C. Lee, Vice Presidents; Henry Wheatland, Secretary and Treasurer; Frederic Howes, jr., Cabinet-keeper; George D. Phippen, Librarian; Frederic Howes, Joseph G. Waters and Matthew A. Stickney, Curators of the Historical Department; William Mack, Henry F. King and Samuel P. Fowler, Curators of Natural History; Benjamin H. Silsbee, Francis Putnam and James Upton, Curators of the Horticultural Department; John C. Lee, Frederic Howes and Ephraim Emmerton, Financial Committee.

My esteemed and somewhat eccentric friend, the Rev. John Lewis Russell, a learned and enthusiastic botanist, when the union of the two societies was under consideration, expressed to me his fears that the subject of natural

history would be deemed of minor importance, and that many of the members absorbed in the subject of genealogy would devote more time to find out who their great-great-grandmothers were than they would to the study of natural history.

I said I thought the subjects of civil and natural history could be studied together to the mutual benefit of the members of the Institute. The fears of Mr. Russell have never been realized as time has proved. The records of our proceedings will show that the study of civil and natural history has continued side by side, to the neglect of neither, but to the advantage of both; and an interest in these subjects has been developed in the county, which I trust will continue and increase. I cannot close without a tribute of respect to those departed friends who were associated with me in the formation of this society, and whose memory I fondly cherish. I well remember their enthusiasm in striving to awaken among the people of Essex County an interest in the study of nature, and I cannot forbear to express my desire and my hope that their laudable examples will be followed by the young men and women of the present day.

A FIELD DAY AT ANNISQUAM

Wednesday, July 16, 1884.

A goodly number of the members and friends of the Institute spent a very pleasant day at this favorite seaside resort on the northern side of Cape Ann. The train made its usual prompt run to Gloucester; at the station, carriages were in waiting and soon the party were safely conveyed to the place of rendezvous, which was the post-office at Annisquam. This building appears to be the centre of the social life of the village. Not only do the U. S. mails arrive and depart with governmental precision, but the usual varieties of a country store are dispensed with courtesy and despatch; in the rear is a small hall in which our baskets, wraps, etc., were deposited and where the noonday lunch was laid. In the second story is a larger hall where the afternoon session was held.

The party spent the forenoon in rambling about the place. Some visited the Laboratory, established by Prof. A. Hyatt, an institution designed to cultivate the study of zoölogy, especially the marine; further reference to what was seen may be gleaned from Mr. Kingsley's remarks at the meeting. Some visited "Sunset rock" upon an eminence near by, which commands an admirable view of the broad Ipswich Bay, Plum Island with its nine miles of length, Agamenticus mountain in Maine and, occasionally, a glimpse of the Isle of Shoals. Some went to Dogtown, about two miles distant, which, many years ago, contained some forty houses, occupied largely by men who served their country during the war of 1812, and afterwards long continued to be the abode of the widows and orphans, especially of those who died on the battle field or who had gone down at sea; the last of them are still remembered

bringing to market the berries and herbs which yielded them a scanty support. They have now all passed away and the dwellings have also disappeared; the old cellars, the grass-grown roads and the traditions of the place impart an interest to this deserted hamlet.

Upon a point on the beach is the "Squam light," which was visited by some; others strolled upon the beach and gathered various specimens of natural history.

This is an interesting locality and its attractions have induced many to pass the heated term in the enjoyment of its cool and refreshing breezes.

The afternoon session was called to order at 2 P. M. by the President who, after a few remarks alluding to the pleasant meeting held at this place in August, 1872, called upon Mr. J. S. Kingsley, who is at present in charge of the Marine Laboratory which was visited in the forenoon, and who gave an interesting account of the history of the institution, the mode of management and its present condition. His remarks are embodied in the communication hereto appended.

Mr. JAMES S. JEWETT, of Gloucester, read a sketch of Annisquam, for which see Historical Collections, Essex Institute, Vol. XXI.

Prof. ALPHEUS HYATT followed. He expressed his pleasure in meeting his old friends, and said that he should always have the kindest feelings toward the Institute. In regard to the Laboratory he spoke of the philosophy of the instruction as distinct from the curriculum adopted in the various schools of learning. He then proceeded to give a short illustrated lecture or talk upon *sponges* which was very interesting and instructive.

A. C. PERKINS, Esq., formerly Principal of Phillips Academy, Exeter, now of Brooklyn, N. Y., Hon. JONAS

H. FRENCH of Gloucester and Hon. JAMES DAVIS of Gloucester, offered interesting remarks. *The first*, after complimenting the Institute upon the value of its work, proceeded to read some extracts of a bright and humorous character from the note book of a zoölogical student. *The second* expressed regret that the Institute could not go farther on the Cape, visit the quarries and accept his invitation to visit his own house and grounds. Referring to the horticulture of the Cape, he said that, while he was prospecting with the view of laying out and embellishing his own grounds, he was visited by Mr. Copeland, a man of experience in such matters, who, after a walk in the woods with the view of discovering what local plants might be found, said that we had more desirable shrubs and other kindred growths than can be found elsewhere. *The third* said that he remembered the circumstance of the meeting held in this place in 1872 and recalled the details of that day's proceedings. He then gave a talk which he considered supplementary to Mr. Jewett's interesting sketch, in which he recalled some of his own early recollections, the changes that had been made in the spelling of the word Annisquam, and the signification of the name as being "Pleasant water," which seemed to him a beautiful designation. He recalled the experiences of his father's days when the principal part of the business of Gloucester was done in this section of the town; the building of vessels was quite extensive and his father had inspected as many as nine thousand barrels of mackerel in a single season.

Hon. N. A. HORTON offered a vote of thanks to Messrs. Alpheus Hyatt and J. S. Kingsley, to Mrs. H. H. Bennett and Mrs. Alpheus Hyatt and also to Hon. Jonas H. French, for attentions and hospitalities rendered or proffered. Vote adopted.

THE ANNISQUAM LABORATORY.

BY J. S. KINGSLEY.

For several years Professor Hyatt has invited one or more students to accompany him to Annisquam to spend the summer in the study of the marine forms so abundant here. It seemed from the number of applications that there was a demand for a marine laboratory on the coast near Boston which should be practically free to all. On consultation with some of the managers, the Woman's Educational Society of Boston became interested in the project and advanced the money necessary to fit up the laboratory which you have visited to-day.

The laboratory is under the charge of the Boston Society of Natural History. It was first opened for students in June of 1881 and during that summer twenty-two students availed themselves of the privileges afforded. So successful was the laboratory during its first season that money needed for a windmill was promptly furnished by that society which is doing so much for the education of woman and which has been constant and unfaltering in its support of the laboratory. By the aid of the windmill, salt water is pumped into the building thus supplying a tank on each of the tables besides three large aquaria in the centre of the room. The object of this was to keep the specimens studied alive in confinement, a task of no small difficulty. During the second year (1882) of the laboratory, fifteen students were present and during 1883 the number was nine. During these three years the laboratory has been under the immediate charge of Mr. B. H. VanVleck, a thoroughly competent instructor.

This year the number of students has been fifteen. Dur-

ing June and July, owing to the absence of Mr. VanVleck, I have had charge of the laboratory; but about the first of August he will resume the position he has so acceptably filled in the past.

The object of the laboratory is to furnish students an opportunity to study animals and plants in the best possible manner. Some of those who come are competent to conduct original investigations and they are left to follow out any line they may choose. The majority, however, come to get a foundation and to fit themselves for teaching. We have nothing to do with species. The common question asked by students at first is what is the name of this and that form. The name is not the most important thing. What we aim to teach are the structure and development of animals and the methods of study best adapted to produce teachers and investigators. Each student, unless previously qualified, dissects a series of types of the larger forms, such as sea anemones, starfish, clams, lobsters, squid, etc. After this comes a drill in the methods of investigating the embryology of marine forms. You all know that a fish comes from an egg, but have you any idea of the way in which that small, simple object becomes converted into the highly organized cod or cunner? To trace these steps of development is the province of embryology and to-day the study of embryology is solving some of the most profound problems connected with life.

All our life here is not spent with the scalpel in hand or in gazing through the microscope. We have to collect the specimens we study. Collecting may seem an easy task but, in reality, it is one which requires experience to meet with much success. On the shores and beaches, when the tide is out, we find some forms; others may be obtained by turning over stones or by digging in the mud. Still others are found below that zone which is laid bare by the

retreating tide twice in every twenty-four hours. To obtain these forms we have recourse to the dredge, a net with an iron rim, which scrapes the floor of the ocean and brings up the treasures living there.

On the surface of the water exists a fauna far different from that found in the location already mentioned, and to collect these a surface net is employed. This is made of thin cheese cloth and is dragged along the surface; the water readily passes through the tissue but the numberless animals floating at the surface are retained in its meshes. These surface forms are mostly minute, but at the same time they are exceedingly interesting. Among the forms will be found numbers of larvæ which delight the eye of the embryologist, but the vast majority are minute crustaceans as yet all but unknown to science. The myriads of these surface swimmers are beyond all computation. The product of an hour's collecting with the surface net can only be numbered by millions.

Field Day at Asbury Grove, Hamilton, Thursday, July 31, 1884.

In the immediate vicinity of the place of meeting is Wenham swamp, which comprises a territory several miles in extent, and with its beautiful ponds and woods and its diversified scenery has long been considered one of the finest localities in this county in which to botanize. Many of our rare and choice plants have here been found; and the collection made, some sixty years since, by William Oakes and Charles Pickering, then young men,[1] have made it well known among botanists. Thither repaired many of those who came to the meeting in the first train, and under the guidance of Mr. John H. Sears were successful in their findings. It is very desirable that at an early day, some of our naturalists should make a careful exploration of this region and publish the results of their researches.

Other members of the party lingered about the grove and took notice of the many improvements that have been made within the past few years, and of the new cottages which have been erected, replacing to a great extent the old tents and cheap structures of the early days of the enterprise.

The noonday lunch was partaken of in the dining hall at the grove.

The afternoon session was held in the chapel, recently erected. It was called to order at 3 P. M., by the

[1] The one entered upon the practice of the law at Ipswich, which he soon left; the other, as a medical student in the office of Dr. A. L. Peirson at Salem.

PRESIDENT, who said: This is the third time that we have been kindly invited to hold a meeting in this beautiful grove, dedicated to Christ and to the church. The first was on July 6, 1866, and the second Aug. 12, 1877. On all these occasions we have been cordially received and heartily welcomed. This is the third field meeting of the present season: the first, at Topsfield, the geographical centre of the county; the second, at Annisquam, on the borders of the sea.

At the first the land and fresh-water animals and plants were considered; at the second the marine. The first commemorated the fiftieth anniversary of the meeting held in Topsfield on the sixteenth of April, 1834. In this connection the PRESIDENT made brief notice of some of the persons who were the first to place their names on the roll of membership: Ichabod Tucker, Daniel A. White, Andrew Nichols, Thomas Spencer, Thomas Cole, Robert Manning, William Oakes, Gardner B. Perry, John L. Russell, John C. Lee, B. H. Ives, J. M. Ives and Charles G. Page.

JAMES F. ALMY, treasurer of the Asbury Grove Corporation, extended a cordial welcome to the Institute at its third meeting at the grove. He spoke of the many natural attractions of the place, and said that while, as a summer home for hundreds of people, Asbury Grove had become very popular, the fact that it had been dedicated to the worship of God gave to it an added charm. Mr. Almy referred to the singing of the birds, the beauty of the trees and the ever-changing foliage, and the many forms of animal life, all of which offered an abundant opportunity for the study of nature which should be improved.

In closing, he gave some information regarding the growth of the Asbury Grove Association, the erection of new cottages and villas and the building of the new chapel, which was paid for by subscriptions in small sums from the people.

Mr. GEORGE D. PHIPPEN, introduced by the President as a member who joined the Natural History Society when a very young man, and who had in various ways, covering a period of many years, promoted its objects, said that we might well draw inspiration from the double purpose for which people come here; there was no difficulty in harmonizing science and religion, both grew from a common inspiration. In this world there have been great convulsions in the building up of the earth; but the process of completion is still going on. Among the prophets of science was Darwin, and the evolutionary principle is recognized as containing the elements of truth. He then spoke of plants with special reference to man's methods of helping nature; selection, cross-breeding and hybridization were the three methods he described. He closed with an appeal to encourage the study of natural history among the young, and said that it had been of great service to him through life.

Vice President F. W. PUTNAM was the next speaker. He said that a little incident which occurred just before the meeting led him to take curiosity as the subject of his remarks. He then stated that while he was sitting under the trees with a friend he noticed many red ants, which were all going in one direction and all carrying objects of the same character. His curiosity was aroused and he caught several of the ants and found that each was

carrying another ant, apparently of the same species. While he and his friend were making their observations, a few other persons gathered around, and in a short time curiosity led many others to the spot and all became interested in the ants and curious to know why they were thus engaged in carrying their fellows, which it was found, could travel well enough as soon as they were taken from the jaws of their bearers. This led to a few statements in relation to the habits of the ants; and thus curiosity had led to knowledge. In this way curiosity had often been the cause, leading men to devote their lives to deep studies, the results of which had been of great importance to mankind, and when properly directed curiosity could not fail to elevate the mind; while misdirected curiosity, on the contrary, debases ourselves and often proves injurious to our fellow-men.

The speaker then gave instances in the life of some of the early naturalists who regarded all natural objects as curiosities, and who wrote to their friends to send them such curiosities as could be obtained, stating that they were curious to compare objects from different places. Thus begun many branches of natural science which have since occupied the minds of profound thinkers and men of deep research. He then called attention to the collecting of arrowheads and other worked stones, out of simple curiosity on the part of many persons, and showed how such curiosity, if not properly directed, leads to hoarding the objects as the miser does his gold, whereas if such collections were properly used and the curiosity of the collector properly directed so as to lead to research, much of interest and importance could be made from such things in relation to the early condition of man and his migrations. In concluding the speaker called attention to the importance

of taking advantage of the natural curiosity and so directing it as to lead to high results while developing the mind.

Mr. J. H. Sears spoke with special reference to the plants peculiar to Wenham swamp. This swamp runs from Danvers to Hamilton and Ipswich, a distance of about five miles, and is three miles broad. In the part in Danvers and West Wenham, where he had botanized most, are the *Trillium erectum* L., *Cypripedium parviflorum* Salisb., *Cypripedium spectabile* Swartz., *Stellaria borealis* Bigelow, *Viburnum lantanoides* Michx. On Turkey Island, at this end of the swamp, the *Cornus florida* L. grows in abundance. He made reference to many plants that had been collected during the day, describing the peculiarities of several varieties.

Rev. B. F. McDaniel made an interesting talk upon the bat and beetle, specimens of which had been given to him since his arrival. He had trained himself to keep an eye upon nature and nature's God, because he did not feel that he would be fitted to enter upon the future life, until he had learned all he could about this. Speaking of the beetle he described the details of its structure to show its adaptability to its needs. He closed by speaking of the desirability of the study of natural history in vacation days, and of this place as being adapted to such study; and also as favorable to the mental growth to be obtained in this way.

Mr. N. A. Horton made reference to the nature of the Institute as devoted to inquiry into things which pertain to civil history, as well as to those which relate to

natural history. Mr. Spencer, of whom the President had spoken, gave shelter to George Thompson, the English anti-slavery agitator, when he was in Salem. Rev. Mr. Cutler, who preached fifty years in Hamilton, took an important part in founding the first settlement in the state of Ohio, which was a part of the great northwest territory to which the ordinance of 1787 applied; and there has been a strong presentation to show that this early anti-slavery measure, of which Nathan Dane of Beverly is supposed to be the author, was a result of preliminary councils, in which Dr. Cutler was a conspicuous influence.

He spoke of the many improvements made at the grove since 1877, and of the many attractions of the place. He alluded to the courtesies extended to the members of the Institute, and concluded his remarks with proposing the following vote which was unanimously adopted.

Voted, That the thanks of the Essex Institute be extended to the officers of the Asbury Grove Association for the use of the grove and the chapel, to James F. Almy for many attentions, and to the young ladies who served so efficiently at the dinner tables.

Field Day at Newbury Old Town, Thursday, August 28, 1884.

The party, on arrival in the early morning trains, proceeded to Plum Island, and spent two hours in a pleasant ramble; thence to the Old Town Parish, where the local points of interest were visited; some to inspect the collections of Mr. Alfred Osgood, some to the old burial ground containing the graves of Rev. John Parker, the Sewalls and many of the first settlers; others to see several of the old houses, especially the residence of the late Joshua Coffin, the historian of Newbury, and the house built by Rev. James Noyes, pastor of the parish from 1635 to 1656, the year of his death, in the 48th year of his age, and now occupied by a descendant, Miss Mary E. Noyes, who was very courteous to the numerous visitors. Delegations from Groveland, Danvers and Byfield arrived at noon.

The afternoon session was held at 2.30 P. M., in the lower hall of the chapel, and was largely attended by residents as well as by the Institute party.

The meeting was called to order by the President, who spoke of another visit of the Institute to Newbury, on a beautifnl October day, twenty years ago. Some of those who were present then are present to-day; but among the absent who are still living, no one is missed more than the venerable Rev. Dr. Withington, who at that time favored the Institute with an interesting sketch of the First Church at Newbury, of which he, then at the age of seventy-five, was the active pastor. He closed by introducing

LUTHER DAME, of Newbury, who read a carefully prepared paper on "The Life and Times of Sir William Pepperell." He reviewed the life of the Elder William, his early struggles and the laying of that mighty fortune which made the name of Pepperell such a tower of strength in the early colonial days down to the time of Sir William, and the final extinction of the name in America.

At the outbreak of the French and English war in 1744, the appointment of the second William by Governor Shirley, to lead the expedition against Louisburg, lifted him into prominence in the colonies and gave him enduring fame. He advanced £5,000 out of his own fortune to defray the expenses of the war and gave himself energetically to the organization of the army. The speaker exhibited original correspondence and other memorials of Sir William and other leading actors in the war, which had been handed down in the family.

This paper was referred to the publication committee to be printed in the Historical Collections.

ALFRED OSGOOD, of Newburyport, read a paper on "Archæology," illustrated by the exhibition of Indian arrowheads and other rude stone implements. His views of their uses were entirely different from those of most students; instead of thinking all these arrowheads, etc., to have been made and used for warlike purposes, he believed that many of them were of an emblematic character; some were used as drills, others for various domestic purposes, and he did not consider it unlikely that many were carried as ornaments. The arrow-chipper kept the art in his own family, and as he was never molested had ample opportunities to indulge his tastes in the way of fanciful designs. The speaker exhibited illustrations which he considered were rude attempts to represent fly-

ing birds, chosen as emblems to propitiate the powers above, and another of a stone implement described by a writer as a weapon of war, which in reality was an ingenious implement used for doubling and twisting cords in household spinning.

Hon. STEPHEN H. PHILLIPS spoke on "The Early Settlers of Newbury."

Among the early settlers of Ipswich who found their way here were the Rev. Mr. Parker, his neighbors John and Benjamin Woodbridge and the Rev. Mr. Noyes. In 1635 they came to this village and Old Town by way of the River Parker, named in honor of the distinguished divine.

He alluded to the long and bitter controversies which sprung up in the parish; he then proceeded to discuss the great witchcraft delusion of the early days and closed by describing a visit to the old home of Rev. Mr. Noyes and tracing the honorable record of the Woodbridges in other states.

The remarks of Mr. Phillips were referred to the committee on publications to be printed in the Historical Collections.

Rev. B. F. MCDANIEL, of Salem, read an elaborate paper on the "Geology and Mineralogy of Newbury," which is herewith appended.

D. B. HAGAR, of the State Normal School, Salem, presented the following resolution which was unanimously adopted:

Resolved, That the hearty thanks of the Essex Institute are hereby presented to Alfred Osgood, of Newburyport,

and Miss Mary E. Noyes, of Newbury, and their co-workers, for their earnest and efficient labors towards promoting the pleasure and success of the present meeting; to the First Parish of Newbury for the free use of its chapel; and to the several gentlemen, who, by their entertaining and instructive addresses, have largely contributed toward the important objects which are ever cherished by the Institute.

Rev. Fielder Israel, of Salem, briefly described a call upon Rev. Dr. Withington, the venerable divine, during the day, and then moved the appointment of a committee to consist of the President, Mr. Phillips and the Secretary, for the purpose of drafting a resolution to be spread upon the records, commemorative of this meeting and the appreciation on the part of the Institute of the life, learning and piety of Rev. Dr. Withington. The motion was adopted.

George Osgood, of Kensington, N. H., remembered a prayer delivered by the venerable divine, forty years ago, in the course of which he presented a sentiment, he, the speaker, had never forgotten and which he thought was applicable to-day. "Let us elect members we are not ashamed of, nor afraid to obey."

The Committee to Dr. Withington.

Rev. Leonard Withington, D. D.

My Dear Sir:

In the opening remarks at the field meeting held in Newbury on Thursday, August 28, 1884, reference was made to the meeting held here some twenty years previously, on a pleasant October day, when you made

some interesting remarks on the history of this church and society, and regrets were expressed at your absence on the present occasion.

Rev. Mr. Israel, of Salem, alluded to the pleasant call which he had made on you this morning, and proposed that the Institute tender to you its high appreciation of your faithful services, not only in your long pastorate among this people, but in the advancement of religious truths, education and general culture in the community.

This suggestion was unanimously approved by the meeting, and in conformity with the wish so feelingly expressed, the members of the Essex Institute now formally present their tribute of high regard and esteem, and officially express the veneration which is due to your advanced years and elevated character.

May Heaven still longer spare your well-spent life!

With the high respect of the Essex Institute,

HENRY WHEATLAND, *Pres.*
STEPHEN H. PHILLIPS,
GEORGE M. WHIPPLE, *Sec'y.*

GEOLOGY AND MINERALOGY OF NEWBURY.

BY B. F. McDANIEL.

THE geology of Newbury is that of the Huronian system of the Eozoic period, that is, the period of earliest life. The rocks of this system overlie those of the Azoic period, and, until recently, were held to be non-fossiliferous. But the discovery of the Eozöon Canadense in the Laurentian limestones of Canada and here in Newbury moved far back the palæontological horizon. With the exception of small areas of palæozoic rocks in Quincy and Braintree, the Huronian system forms the main part of the coast from the New Hampshire line to Plymouth. In great part it is drift-covered.

The rocks in sight show great disturbance and metamorphism. In some localities the evidences of these changes are of the most striking character. Their condition is simply chaotic.

The stratified portions have usually a northeast by southwest strike, and the unstratified and intruded members of the series show a parallelism with the strike of the stratified rocks, which usually dip sharply to the northwest.

The Huronian system in eastern Massachusetts is chiefly made up of the following rocks:

1. Granite (hornblendic and binary).
2. Felsite (petrosilex of some authors).
3. Diorite (unstratifed and chiefly exotic).
4. Hornblendic gneiss, stratified diorite.
5. Limestone.

1. *Granite.* It will be noticed by recent students of geology that several changes have taken place in the classification of our rocks. The old name syenite has given place to that of hornblendic granite, as being more specific. The term granite is now used to cover many varieties of rock, all crystalline, ranging from distinct diorite on the one hand to felsite on the other. The specific names of these varieties are determined by the presence or absence, and the greater or less quantity, of certain constituent minerals, mainly hornblende, in the rock. I have always maintained, and this is the view now generally accepted, that there are no absolute distinctions between rocks. There are varieties almost infinite, but no absolute species. It is possible to arrange a continuous scale of specimens covering the whole series.

It is necessary to have specific names for strongly marked rocks, though these resolve themselves into varieties that shade off again into other species. It requires long familiarity with, and close study of, all classes of rocks to be able to determine these specific distinctions. When even the professors and geological authors differ so much in their classifications, amateurs need not feel cast down by an occasional mistake.

In Newbury a fine hornblendic granite is developed in two bands or ridges running east and west, enclosed by diorites, and broader and coarser at the eastern than at the western end.

The serpentinic limestone is associated with this granite, which led Dr. T. Sterry Hunt to call it Laurentian; but the whole formation is pronounced by Mr. Crosby to be Huronian.

2. *Felsite.* This term is now used to cover many varieties of rock, some of which were formerly called porphyry, metamorphic slate, hornstone, etc.

The term porphyry has deservedly fallen into disuse as a substantive, and is now rightly used as an adjective. All the varieties once called porphyry are now arranged as varieties under the several great species or families of rocks.

The term felsite is used to include rocks composed mainly of a fine paste of quartz and feldspar, sometimes enclosing grains of quartz and crystals of hornblende and feldspar, sometimes banded like jasper, and sometimes segregated like conglomerate. Examples of the compact varieties are the so-called jasper of Saugus and Lynn; the banded varieties are found at Marblehead, and an example of the segregated variety is the so-called toadstone of Newbury.

The Newbury felsite extends in a belt along the River Parker, from its mouth to Byfield, a distance of five miles. Its width is from a few rods to a mile and a half, and lies between belts of granite.

Its prevailing color is a deep red or brownish red, but sometimes shades to purple, pink and gray. It is never porphyritic, but shows a banded structure, due to the interlamination of layers of quartzose and feldspathic materials. This banding indicates a sedimentary, not an igneous origin, though like all metamorphic rocks, our felsite has undergone material change.

I have already alluded to the so-called toadstone of Newbury as a variety of felsite. A full examination of this rock will be found in Crosby's Geology of Eastern Massachusetts, which I have largely followed in this paper.

In Newbury the felsite is highly ferruginous. The sides of the granitic basin in which it lies partake of the reddish cast of the felsite. In some places it might not im-

properly be called an iron ore, and its decomposition in one or two places observed by me has yielded a red ochre.

3. *Diorite.* This rock is laid down on Crosby's map as covering a large part of Newbury. It is the gangue of the argentiferous galena. Composed of feldspar and hornblende, generally in a finely divided, and sometimes in an impalpable mixture, it is very hard.

Diorite is a convenient term to describe all that class of rocks formerly known as trap and greenstone. Like granite and felsite, it is not the name of a single distinct species, but of a family having relationship on one hand to felsite, and on the other to granite and hornblendic gneiss.

4. *Limestone.* The magnesian limestone of Newbury is the best known of its geological formations.

In colonial times quarries of it were worked at the localities known as the "Devil's Den" and "Devil's Basin." In his diary of remarkable events uuder date of 1697, Judge Sewell records the discovery by Ensign James Noyes, of the beds of limestone in this town at the localities just named. The discovery created great excitement, as hitherto clam and oyster shells had been the only sources of lime, and great difficulty had arisen in consequence.

This appears to have been the first limestone discovered in Massachusetts, and so valuable was it held to be that restrictive regulations for its use were adopted and a committee appointed by the town to enforce them.

In the first century after its discovery, quantities were exported, though from the size of the excavations I should

judge that the whole amount was not large. Why the quarry was abandoned I have not been able to learn.

It is in the "Devil's Den" that the most interesting minerals in Newbury are found. I have visited it and the other localities here for the last twelve years. First in interest is the serpentine, varying from a rich bottle green to a leek green; the first compact, pure and translucent, the second impure and opaque; the most harmful impurity being iron pyrite disseminated through the mass.

Great expectations were once entertained as to the commercial value of this rock, and a company operated the quarry for marble, but nothing has been done in a commercial way for many years. A shaft was sunk in the field, not far off, during the silver excitement, but was soon abandoned. Quantities of a beautiful porphyritic rock were thrown out, that in masses, might prove to be profitable.

At present, hardly enough attractive rock is in sight to warrant great expectations, and the large masses of wollastonite, garnet, calcite and dolomite mixed with the serpentinic limestone would seem to confirm this view; but when we consider that the excavations have not even reduced the knolls to the level of the surrounding country, and the "Den" itself is a very modest pit, the resources of the place can hardly be said to be exhausted.

I am firmly of the belief that some generous blasting would reveal an abundance of fine, rich stone, superior to any verde antique marble in our market. Associated with the serpentine are masses of wollastonite, once called tremolite. It is a beautiful white mineral, in long, bladed, radiated crystals. It is too brittle to serve any other than the mineralogist's purpose.

Masses of compact garnet are also found at the "Den." When associated with or disseminated through the ser-

pertinic limestone, this massive garnet enriches it for ornamental purposes. It is also an excellent flux, and possibly may sometimes serve that purpose here.

Small masses of crystallized calcite appear, which I believe to be the same as the chalybite or carbonite of iron that occurs in connection with the galena at the silver mines and elsewhere in Newbury.

Asbestus occurs at the "Den," but not in large quantities. Much of the mineral there found and called asbestus is an asbestiform serpentine, or chrysotile, which appears in thin seams interlaminated with noble serpentine. This is one of the most beautiful combinations known to me. The dark green serpentine prevails at the "Den," the light green at the "Basin," which is a larger excavation, but not so well known.

It would seem that information on these points would be better known here than elsewhere. Possibly this is the case with the silver mines, the popular interest in which was almost as great as was the speculative. The discovery and rapid development of the argentiferous galena was one of the great epochs in your local history. A sadly brief one it was, as these deserted mounds and works testify.

That this clean, brilliant metal, mined in masses that made the town talk of those days, and yielding flattering assays, was not to be a perpetual bonanza, was regarded as rank heresy.

At least, that was my experience. No account, apparently, was taken of the local geology nor of the character of the gangue rock with reference to its docility in smelting. I ventured to express an opinion to the superintendent of the Chipman mine that these galena deposits were pockets in the diorite, each of them comparatively small in size, though possibly many in number. Operations

were suspended sooner than I anticipated, judging from the output of the leading mine, so that I do not know whether this theory was or was not confirmed. It is to be hoped that a part of the expectations then raised may sometime be realized.

The last formation to be noticed is the amygdaloid lying in the basin of the River Parker and on Kent's Island. This is a purplish-brown or chocolate color. It is not of great extent and is of little importance. On one side it passes into a breccia, and on the other into a chlorite slate, and may be only a product of the felsite.

I trust I have said enough to show that Newbury is rich in geological and mineralogical interest, and to excite a desire in some minds to explore still farther these fields and hills. It was amateur exploration that revealed these minerals of which I have been speaking. It is to the amateur geologist that the professional student mainly looks for hints.

Where so many richly suggestive hints exist as in Newbury, the amateur ought to feel encouraged to prosecute his field-work; not, let me say, in the hope of "striking something rich," with which to form a stock company, but to contribute new and important facts to science and to enrich his own mind with the wealth of knowledge and beauty that fills the earth.

FLOWERING OF PLANTS, DECEMBER, 1884.

At the meeting of the Institute, held on Monday, December 15, 1884, Mr. John H. Sears presented the following list of plants which he had found in bloom in the fields and pastures of Salem and vicinity.

DEC. 8, 1884.

Tansy, *Tanacetum vulgare.*
Fall Dandelion, *Leontodon autumnale.*
Common Dandelion, *Taraxacum Dens-leonis.*
Golden Rod, *Solidago nemoralis.*
Sea-side Golden Rod, *Solidago sempervirens.*
Shepherd's Purse, *Capsilla Bursa-pastoris.*
Charlock, *Brassica sinapistrum.*
Field Chickweed, *Cerastium arvense.*
Common Mallow, *Malva rotundifolia.*
Yarrow, *Achillea millefolium.*
Common Groundsel, *Senecia vulgaris.*
Red Clover, *Trifolium pratense.*
Mayweed, *Maruta cotula.*
Arrow-leaved Violet, *Viola sagittata.*
Spurry, *Spurgula arvensis.*
Knawel Weed, *Scleranthus annuus.*

DEC. 14, 1884.

Witch hazel, *Hamamelis Virginica.*

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Essex Institute, Salem, Mass.
Bulletin

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